MINISTRY OF HEALTH

Final Report of the Committee on

COST OF PRESCRIBING

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COMMITTEE ON COST OF PRESCRIBING

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COMMITTEE ON COST OF PRESCRIBING

To the Rt. Hon. DEREK WALKER-SMITH, T.D., Q.C., M.P.,
Minister of Health

Sir,

INTRODUCTION

Appointment and terms of reference

1. We were appointed in June 1957 with the following terms of reference:

> "having regard to the increase in the cost of prescriptions issued under the National Health Service, to investigate the factors contributing to this cost and to make recommendations."

A separate Committee was appointed by the Secretary of State for Scotland to enquire into prescribing costs in the general medical services and in the hospital and specialist services in that country. Our remit, which was for England and Wales only, was narrower and did not authorise us to investigate prescribing practice in the hospital and specialist services. At our first meeting we were assured, however, by Mr. Vosper, as Minister of Health, that he did not wish to limit in any way the scope of our investigations. Accordingly, while our report is concerned primarily with practice in the general medical services, we have considered ourselves free to consider any aspect of the hospital service which, in our view, has a bearing on the prescribing habits of general practitioners.

Background to our appointment

2. The increasing size of the national drug bill has presented successive Ministers of Health with a very worrying problem. Between 1949 and 1956 the gross cost of prescriptions issued under the National Health Service had increased from £30 millions per annum to just under £57 millions. It seemed probable that the drug bill would have doubled before the Service celebrated its tenth anniversary. The total number of prescriptions issued had increased by 13-14 per cent. (from 202 millions in 1949 to almost 229 millions in 1956) and the average cost per prescription by two thirds (from 3s. 0d. to 5s. 0d.).

3. While there had been no detailed analysis of the constituent items in the rising cost of prescribing, the growth of the drug bill had been ascribed in part to a period of exceptional development in the pharmacological and pharmaceutical fields, the effects of which had been felt also in other countries in some of which it had been found necessary to control the supply of medicines under their own systems of social security and, more recently, to control the quantities prescribed.

4. In this country various expedients had been tried to check the rising expenditure on prescriptions, including the imposition of a charge, but none had

succeeded for long in halting the increase in cost. So far no explanation had been found for the continuing increase in numbers of prescriptions per head of population during a period when the improved efficacy of drugs should have shortened illness and returned people to health and work in shorter time.

It was with these facts in mind that we set about our investigations.

Procedure

5. We held our first meeting on 19th June, 1957 after which we issued a press notice containing a general invitation to submit written evidence. In addition, we decided to invite evidence from some representative organisations whose opinions we felt it was essential to ascertain. To these bodies we issued the following questionnaire:

(1) Does the instruction and training of the medical student and young doctor arm him to face the difficulties of present day prescribing? If not, in what way could the training be improved?

(2) What is the influence exerted by hospitals and consultants on the prescribing of both young doctors and doctors established in practice whose patients are referred to hospitals? How could hospitals and consultants further help the general practitioner to prescribe with economy?

(3) Should more be done to reduce the effect of pressure from patients? If so, what steps to this end could most usefully be taken and by whom?

(4) Should anything be done about the pressure on doctors by modern methods of salesmanship brought to bear by the drug houses? Is sufficient information and advice available to doctors to enable them to put the claims of drug manufacturers into their proper perspective and, if not, who should provide it?

(5) To what extent, if at all, are patients, or particular groups of patients (such as old people), especially prone to waste medicine? If there is waste what steps should be taken to prevent it?

(6) The average number of items prescribed per head of population rose from just over 5 in 1949 to over 5½ in 1956 during a period when the improved efficiency of drugs might be expected to have restored patients to health and work in a shorter time. What are the reasons for this rise in the frequency of prescribing?

(7) Under the Health Service a general practitioner may prescribe any drug which he thinks necessary for the treatment of his patient, including new remedies about the therapeutic value of which insufficient information may be available to guide him. Should the prescribing of new remedies be restricted until evidence of their therapeutic value has been obtained?

(8) What, in your opinion, could be done to ensure that prescribing doctors employ the less expensive preparation when alternatives, equally effective, are available?

6. Separate questionnaires, the texts of which are set out in Appendices II and III of our Report, were addressed to the Association of British Pharma-

ceutical Industry, the Central N.H.S. (Chemist-Contractors) Committee and the Pharmaceutical Society of Great Britain.

7. A list of the organisations and individuals who submitted evidence is given in Appendix I of our Report. We should like to take this opportunity of expressing our gratitude for their co-operation.

Interim Recommendations

8. When inviting the Committee to undertake their task, Mr. Vosper expressed the hope that we would feel able to make interim recommendations as to general advice which might be given to doctors on the principles of economical prescribing to help them in the period before our final report became available. General practitioners had already received advice from the Minister on the principles of economical prescribing on a number of occasions and we asked ourselves at the outset whether further letters of exhortation were likely to produce any tangible effect. In our preliminary enquiries we sought to determine to what extent general practitioners were in fact prescribing extravagantly. While it seemed to us that there was scope for economy, we found no evidence of widespread and irresponsible extravagance on their part. Consequently, we did not feel justified when framing our Interim Report in recommending further direct ministerial exhortations on the subject of economical prescribing. Our investigations had led us to conclude that much could be done to provide general practitioners with facts about the cost and therapeutic value of drugs and other essential information and that this might in itself assist them to prescribe more economically. Our Interim Report, which was presented in May 1958, made recommendations, therefore, which were mainly directed to that end. We return to these interim recommendations in paragraphs 47-50 below.

Outline of our report

9. Prior to our appointment much work had been done by distinguished experts, working on the various committees under the chairmanship of Lord Cohen of Birkenhead, who had given former Ministers specialised advice on prescribing under the National Health Service based on a therapeutic assessment of the type of drugs prescribed. Apart from the fact that we were not qualified to do so, we soon decided that nothing would be gained by our going over this ground again. We decided accordingly to direct our efforts towards uncovering and suggesting remedies for causes of the high cost of prescribing which had not received the same detailed attention.

10. In our Interim Report, as we have already said, we confined ourselves in the main to making suggestions for providing doctors with further information to assist them with their prescribing.

11. This, our main Report, is divided into nine parts. In Part I we describe the mechanics of prescribing and outline the measures previously taken to control costs and the further action recommended in our Interim Report. In Part II we attempt to assess the nature of the task now before us and we look at the drug bill against the background of the cost of the National Health Service as a whole.

In the rest of the Report we consider aspects of the problem which seem to us to have an important bearing on doctors' prescribing habits. Part III

deals with the training and instruction of the medical student and young doctor, the provision of information on new drugs for the general practitioner and the influence of consultants and of patients on his prescribing. In Part IV we examine the principle of the doctor's right to prescribe. In Part V we consider the drug manufacturers, their function and contribution to medicine, the effect of their advertising campaigns on prescribing, the costs of their research and the question of clinical trials of new drugs. Part VI deals with the role of the retail pharmacist. In Part VII we touch on methods of charging for prescriptions and the question of restriction on quantities to be prescribed. In Part VIII we consider a number of miscellaneous matters having a bearing on the cost of prescribing, including the need for more adequate socio-medical information, dispensing doctors' costs and stock orders. In Part IX we point to the need for a permanent body to advise the Minister expeditiously on matters affecting costs and economics of the pharmaceutical service.

For convenience a summary of our findings, conclusions and recommendations follows this introductory note.

Summary of Main Findings, Conclusions and Recommendations

12. (i) Our further investigations have confirmed our interim findings that, while there is no evidence of widespread and irresponsible extravagance in general practitioners' prescribing, there is scope for economy; some waste is involved in the present tendency to order larger quantities on each prescription.

The aim should be to keep the Service as economical as possible, compatible with the best available modern treatment, to ensure good value for money and to check waste (paragraphs 8, 49 and 115).

THE DRUG BILL IN PERSPECTIVE

(ii) The total cost of the pharmaceutical service rose considerably up to 1951/52. During the period 1951/52-1957/58 the rate of increase was less than that for most of the other branches of the Health Service. Since 1951/52 the proportion of the total cost of the Health Service attributable to the pharmaceutical service has even decreased slightly (paragraphs 59-63).

(iii) Certain factors had an important influence on costs from year to year. An influenza epidemic in 1951, the release of chloramphenicol for general prescription and other factors contributed to the increase up to 1951/52. The rate of increase abated during the next three years due, among other things, to a fall in the cost of dressings, the new shilling prescription charge and new arrangements for the payment for certain proprietary preparations in frequent demand. The general release of further expensive new preparations, including the tetracyclines and the corticosteroids, together with increases in allowances and fees for retail pharmacists and the prescribing of increased quantities, added to the drug bill in subsequent years (paragraphs 72-80).

(iv) The main factors influencing the cost of prescriptions were the coincidental introduction of a free and comprehensive Health Service for all and the discovery and large-scale production of valuable but expensive drugs. Inflation, population changes and the introduction of prescription charges all played their part (paragraphs 82-96).

(v) Differences in cost from area to area are considerable. If by further study means can be found of reducing the more glaring examples of high frequency some savings would ensue (paragraph 101).

(vi) Factors such as changes in money values, availability and scope of benefits rule out any but the broadest comparisons between experience in different countries. Investigation suggests, nevertheless, that wherever medicines and drugs are supplied to the public in conditions analogous if not

identical with those of the National Health Service, the absolute cost will be heavy (paragraphs 109-110).

(vii) The community as a whole derives tremendous benefits from the pharmaceutical service, financially as well as in relief of suffering and saving of life. The use of new drugs has made a valuable contribution in the treatment of tuberculosis and other infectious diseases and in mental practice, and has relieved the pressure on hospital accommodation. The Minister should consider ways and means of publicising these facts in a telling manner (paragraphs 116-122).

MEDICAL TRAINING

Undergraduate

(viii) While it is not expedient to make statutory provision for a compulsory examination in costs as part of the medical curriculum, all medical schools should be encouraged to take an interest in economy in prescribing. The attention of all teaching bodies should be drawn to measures designed to impress on students the importance of economical prescribing (paragraphs 133-134).

(ix) The Minister should invite the Association recently established to study problems of medical education to consider the economics of prescribing (paragraph 134).

(x) Medical schools, where only a minority of students participate in schemes of secondment to general practitioners, should be asked to extend existing arrangements (paragraph 135).

(xi) The practitioners concerned should be asked to discuss with students errors of excessive and inappropriate prescribing (paragraph 135).

Postgraduate

(xii) There is a clamant need for systematic postgraduate instruction of general practitioners in pharmacology and therapeutics; the average practitioner is unable to judge the validity of the makers' claims for the many new drugs now produced (paragraph 140).

(xiii) The appointment of senior general practitioners to instruct junior hospital medical staff in the practical aspects of prescribing in general practice should be considered (paragraph 139).

(xiv) Wider use should be made of refresher courses for general practitioners and of the official trainee-assistant scheme (paragraphs 141-143).

(xv) Deans and Directors should be asked, where appropriate, to consider including in the syllabus for refresher courses instruction about advances in practical therapeutics and the merits and demerits of new drugs and some indication of costs (paragraph 141).

(xvi) Principals participating in the trainee-assistant scheme should be asked to emphasise to trainees the importance of prescribing with economy (paragraph 142).

(xvii) New entrants to general practice should be urged to attend a course of

one or two weeks' duration, within one year of entering practice. Such course might be provided by Universities and Medical Schools on behalf of the Ministry of Health and should put special emphasis on problems of prescribing (paragraph 144).

(xviii) The organisation of postgraduate seminars and lectures for general practitioners should be encouraged (paragraph 143).

GENERAL PRACTICE

The doctor's right to prescribe

(xix) To be of practical value any scheme to limit the range of drugs to be prescribed by general practitioners should involve no loss of efficacy of clinical treatment, should avoid administrative complexities and should secure substantial savings. There are overwhelming objections of principle and of practice against limitation and no restriction should be imposed on the doctor's right to prescribe whatever drugs he considers to be proper and necessary for his patients (paragraphs 189-200).

Information for the general practitioner

(xx) The main difficulty facing the practitioner is the dearth of impartial information on new drugs in convenient and readily accessible form. The provision of adequate information, together with improvements in training and education, is the key to good prescribing.

An independent publication should be established to distribute to general practitioners up-to-date information about new drugs and preparations and the results of clinical trials. The appropriate professional bodies should be asked to take responsibility for producing the new journal, which might be called " Prescribers' Journal " and which should replace " Prescribers' Notes", for the medical profession (paragraphs 153-163).

Regional Medical Officers

(xxi) Regional Medical Officers could do more than at present to help doctors in their prescribing. The system of informal advisory visits by Regional Medical Officers should be extended (paragraph 146).

(xxii) Regional Medical Officers should attend seminars and lectures (paragraph 143).

(xxiii) The possibility of enlisting the help of University Departments of Pharmacology and Therapeutics in the instruction to be given to general practitioners by Regional Medical Officers should be considered (paragraph 145).

Disciplinary measures

(xxiv) The Minister should consult the British Medical Association with a view to tightening the present standards for the investigation of instances of excessive prescribing. Where a general practitioner's costs habitually exceed

the local average by more than 50% the case should be referred for investigation by the Local Medical Committee (paragraphs 174-176).

(xxv) The penalties for excessive prescribing, particularly where doctors prescribe extravagantly in order to attract patients, should be severe (paragraph 177).

General advice to practitioners on good prescribing

(xxvi) Official titles should be used on prescriptions in preference to proprietary names. Prescribers should endeavour to use such titles even when they are longer or less readily memorised than proprietary names (paragraphs 210-213).

(xxvii) When prescribing by brand name, the prescriber should be convinced of the preparation's superiority by private experience or published evidence and not by unsubstantiated claims by the makers (paragraph 212).

(xxviii) The Ministry or other body concerned should inform prescribers as soon as economies are likely to result from using official titles for individual preparations (paragraphs 212-213).

(xxix) Doctors should not prescribe expensive, elegant preparations when simpler preparations of the same drug are available (paragraphs 215, 218).

(xxx) Doctors should refrain from prescribing unnecessarily elaborate polypharmaceutical preparations (paragraphs 216, 218).

(xxxi) Information should be supplied about prices of B.N.F. and analogous preparations, classified by therapeutic groups and, wherever practicable, doctors should select from the appropriate group the least expensive of the effective drugs available (paragraphs 217-218).

(xxxii) There should be no ban on the prescribing of new drugs but, until the results of clinical trials are known, doctors should only prescribe new drugs when existing drugs have failed (paragraph 261).

Quantities

(xxxiii) The Minister should seek to reach agreement with the professional bodies concerned on the voluntary limitation of the amount of drugs to be supplied on one prescription to one week's supply or less, with exceptions in chronic or particular cases. Such an arrangement should run for a trial period of two years (paragraphs 298-299).

(xxxiv) To help general practitioners, the Joint Formulary Committee should be urged to amplify the information contained in the alternative edition of the British National Formulary about reasonable quantities to be prescribed (paragraph 300).

HOSPITAL AND SPECIALIST SERVICES

(xxxv) The example set by the specialist staff will considerably influence students in their pre-registration year and young housemen because it is during this stage of their training that young doctors begin to prescribe on their own

responsibility. It should be an educational obligation on every consultant to exercise a proper economy in his own prescribing for hospital patients (paragraph 164).

(xxxvi) Hospital medical staff should receive instruction in prescribing costs (paragraph 165).

(xxxvii) The ultimate responsibility for the continuing care and treatment of his patients rests on the general practitioner and the decision whether to accept the advice of a consultant in a particular case is within the practitioner's discretion. When answering letters from general practitioners or referring patients back to them, consultants should recommend official preparations wherever practicable (paragraph 168).

(xxxviii) Consultants and hospital medical staffs generally should be made more aware of the penalties to which general practitioners are liable for excessive prescribing (paragraph 169).

THE PUBLIC

(xxxix) Some patients exert pressure on their doctors to prescribe particular drugs for them but the effect of such demands on the drug bill cannot be measured. Senior doctors and well-established partnerships are generally better able to resist them than young doctors lacking in experience and working on their own. Patients should be asked to co-operate by accepting more readily the doctor's advice and guidance. Posters and notices should be provided for display in doctors' surgeries warning patients against the medicine habit (paragraphs 170-2, 179).

(xl) There should be no curtailment of the existing rights of patients to transfer from their chosen doctor (paragraph 180).

THE DRUG INDUSTRY

(xli) Everything possible should be done to prevent public money being wasted in inflated and expensive publicity campaigns. The industry should be asked to consider with the professional bodies and the Minister whether anything further can be done to maintain the highest standards and limit the more extreme forms of advertising (paragraph 208).

(xlii) Competition, when the period of patent protection of a proprietary preparation expires, may bring down the price and should be encouraged (paragraph 212).

(xliii) The Minister should consider with the industry and with the medical and pharmaceutical professions ways and means of limiting the present proliferation of polypharmaceutical preparations (paragraph 216).

(xliv) Firms should be encouraged to increase their research effort. Wider

co-operation between all parties concerned in research is called for (paragraph 258).

(xlv) The voluntary price regulation scheme is making a valuable contribution: it is a considerable step forward that the industry should recognise and accept the need for price regulation. Pricing arrangements between the Ministry of Health and the pharmaceutical industry should be designed firstly, to allow fully for genuine research expenditure and secondly, to discourage extravagant overheads and sales promotion (paragraphs 223, 260).

(xlvi) The pharmaceutical firms which do research are making an essential contribution to therapeutic progress. The costs of research on therapeutic and prophylactic products are considerable but are no higher than in other countries making a comparable effort. The conditions which favour profits for research, such as patent rights, the publicising of proprietary names and the price agreement with the Ministry of Health should be accepted. No changes in the organisation of the pharmaceutical industry could be recommended without a much more detailed enquiry than the Committee have been able to make (paragraph 258).

(xlvii) The drug industry is playing an all important and progressive role in the development of the N.H.S. and the export trade. The doctor's freedom to prescribe in the N.H.S. inevitably encourages extravagant sales propaganda, some of which is undesirable. The pharmaceutical industry is one which has to face unusual risks. The sudden discovery of a new therapy anywhere in the world can put a product, on which a great deal has been spent, off the market overnight (paragraph 259).

CLINICAL TRIALS

(xlviii) Present arrangements for the organisation and interpretation of clinical trials and for publication of the results are inadequate. Better organisation and speedier publication could greatly influence the prescribing practice of general practitioners. New drugs should be subjected to independent controlled clinical trial as early as possible. Hospital authorities should encourage clinical trials and should give those who take part in them time and facilities for the work. Therapeutic research should be regarded as a normal clinical function and not as a remote activity for the select few (paragraphs 258, 261-262).

(xlix) The appropriate professional bodies should be asked to collaborate in the formation of a Clinical Trials Committee which would organise clinical trials of new drugs and preparations and interpret the results. Their findings should be published in the proposed new "Prescribers' Journal" (paragraphs 163, 264-267).

(l) The costs of clinical trials should be met by the manufacturers. It is undesirable that doctors should be paid by the manufacturers for participating in such trials (paragraph 265).

(li) Firms wishing to continue to make their own arrangements for clinical trials should be encouraged to do so (paragraph 266).

RETAIL PHARMACISTS

(lii) There is no satisfactory alternative to the present system of supplying National Health Service medicines through the established retail channels. If purchase and distribution of medicines were undertaken centrally or through Health Centres costs would increase (paragraphs 270-272).

(liii) Chemist-contractors should employ their knowledge and experience to keep the basic costs of medicines as low as possible (paragraph 272).

(liv) The prices which the Ministry pays should be reviewed at regular intervals. Payments to pharmacists should be made as promptly and correctly as possible (paragraph 272).

(lv) Regulations which impose additional tasks on chemists and increase their overheads should be avoided (paragraph 272).

(lvi) In order to help chemists, doctors should be encouraged to use non-proprietary names, where appropriate; and the industry should be encouraged to rationalise pack sizes and prescribers to order quantities in accordance with the packs available (paragraph 272).

(lvii) The appropriate medical and pharmaceutical organisations should be invited to discuss methods for improving professional collaboration between general practitioners and retail pharmacists (paragraph 273).

PRESCRIPTION CHARGES

(lviii) The present prescription charge is a tax which, besides stimulating the wrong incentives, has proved disappointing financially. If any change in the basis of the prescription charge is contemplated in the future, it should not be put into effect without an attempt to assess in advance its probable effects by means of a special inquiry through a body such as the Social Survey (paragraphs 289-291).

(lix) If a voluntary limitation of the quantities to be prescribed on one prescription proves to be successful in controlling expenditure on drugs, consideration should be given to the desirability of abolishing the prescription charge altogether (paragraph 301).

DEPARTMENTAL STATISTICAL ORGANISATION

(lx) The Minister should encourage continuous studies of the economic and social aspects of the National Health Service, to be conducted either inside or outside the Government Service (paragraph 305).

(lxi) The Minister should make suitable arrangements for obtaining adequate statistical information about prescribing and for the analytical study of this information (paragraph 104).

(lxii) The quality of the data available on prescribing should be improved to enable accurate assessment to be made of the nature and magnitude of the forces tending to increase the drug bill (paragraph 103).

(lxiii) The Minister should make arrangements for ad hoc inquiries in selected areas where appropriate e.g. into the relative prescribing habits of single-handed doctors and of those in partnership or group practice (paragraph 105).

(lxiv) A study of the prescribing of new drugs such as the antibiotics and corticosteroids should help to reduce wastage of these very expensive items (paragraph 106).

(lxv) A study of the relative roles of proprietary and standard preparations in prescribing under the National Health Service and of the use of cheaper alternatives should help to effect savings (paragraph 107).

GENERAL

(lxvi) A permanent expert body, to include men with business experience, an economist and a statistician, should be appointed to advise the Minister expeditiously on matters affecting costs in the pharmaceutical service (paragraphs 340-346).

(lxvii) In the absence of a stock orders scheme, which we do not regard as necessary in England and Wales, an early and substantial increase in the present capitation payment for the supply of drugs for immediate administration should be considered (paragraph 323).

(lxviii) The practice of substitution is not a practical or desirable method of securing economies in the drug bill. It removes any incentive on the part of the prescriber to get to know the non-proprietary alternatives to proprietary preparations (paragraphs 332-335).

(lxix) The amount by which the drug bill is inflated by purchase tax payable on medicinal preparations should be noted and publicised every year (paragraph 339).

PART I
THE MINISTRY AND THE PHARMACEUTICAL SERVICES

CHAPTER 1
MECHANICS OF PRESCRIBING AND METHOD OF PAYMENT FOR MEDICAMENTS SUPPLIED

13. Doctors are entitled to prescribe under the National Health Service Act, 1946 any drugs or medicines and certain specified appliances which they consider necessary for the treatment of their patients, subject to a liability to justify themselves before their colleagues as to cost if called upon to do so. They are not entitled to prescribe things not required as drugs for treatment, such as foods, toilet preparations or, in certain circumstances, disinfectants. The drugs are ordered by the doctor on an official prescription form (E.C.10) provided by the Executive Council and the order must be signed by the doctor in his own hand. The prescription form may not be used for persons other than patients who are receiving treatment from the doctor under the National Health Service (it may not be used for a doctor's private patients) and normally a separate form must be used for each patient. A doctor may, however, in certain circumstances issue bulk prescriptions using Form E.C. 10 for groups of patients resident in schools or other institutions.

14. The prescriptions may be dispensed by a pharmacist, drug store or supplier of appliances in contract with an Executive Council, the latter being responsible for the local administration of the general medical and pharmaceutical services. Pharmacists are paid for these services, in accordance with the Drug Tariff, on the basis of a payment for each prescription dispensed. The Minister is required to prepare the Drug Tariff which specifies the quality of the materials to be supplied and certain physical and chemical standards and sets out the prices or the basis of calculating them. The Tariff is revised at frequent intervals (quarterly or more often as need arises).

15. The pre-war practice under the National Health Insurance Scheme was to price each prescription but owing to the large number of prescriptions it has not been practicable to follow it under the National Health Service. By agreement with the chemist-contractors, prescriptions are now divided into classes some of which are fully priced and some averaged. At present about 1,830 pharmacists whose accounts are accepted as relatively small, i.e. not exceeding 500 prescriptions per month, have all prescriptions fully priced. Otherwise all areas in turn have prescriptions fully priced for three months out of twelve.

16. For fully priced prescriptions the pharmacist's reimbursement is made up of the net cost of the ingredient or appliance (i.e. the wholesale price) plus an on-cost allowance of 25 per cent for overhead expenses and profits, a

dispensing fee* in respect of his professional services and a flat rate allowance of 1·62d. for providing bottles and other containers. For example:

18 Tabs 'X' 0·5 mg.

	Basic ingredient cost	3s. 10d.
plus	On-cost 25%	11·5d.†
plus	Container allowance	1·62d.†
plus	Dispensing fee	1s. 2d.
		6s. 1·12d.

Amount paid to pharmacist—6s. 1d.

17. Where prescriptions are "averaged", those with an ingredient cost of 5s. or more are priced in full and the rest are paid for on the average of a 20 per cent sample which is fully priced. The overall effect of these arrangements is that at present some 70 per cent of all prescriptions are fully priced.

18. A doctor who normally prescribes for his patients is required himself to supply drugs and appliances which are needed for immediate administration or application or for use before a proper supply can be obtained. For these items, which he supplies at his own cost, he is reimbursed at the annual rate of 2s. 6d. per hundred capita, that is, for 2,000 patients £2 10s. per annum. He is also entitled to separate payment at Drug Tariff rates for certain other items.

19. In rural areas arrangements may be made for doctors to dispense drugs and supply appliances to any patient who would have serious difficulty in obtaining them from a pharmacist or who lives more than a mile from the nearest pharmacy. These dispensing doctors may elect to be paid for drugs either on the same basis as pharmacists, i.e. in accordance with the Drug Tariff, or by means of a capitation fee of 10s. 0d. per annum. Additional payments are made to doctors paid on a capitation basis to cover the cost of certain specially expensive drugs and appliances. A dispensing doctor is entitled (with the patient's consent) to issue a prescription—for dispensing by a pharmacist—for certain drugs and appliances.

20. The Pricing Offices price prescriptions submitted monthly by pharmacists and certify to Executive Councils the amounts due for payment. They also price prescriptions submitted by doctors where payment is according to the Drug Tariff. Most of the Pricing Offices were set up by Insurance Committees or groups of Committees under the old National Health Insurance Scheme. Under the National Health Service they were brought under the central control of the Joint Pricing Committees for England and Wales, the members of which are elected mainly by Executive Councils, with additional pharmacists and doctors nominated by the Ministry of Health.

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*The scale of dispensing fees for drugs, preparations and appliances other than elastic hosiery and trusses, varies according to the nature of the professional service rendered. It ranges from 5d. to 7s. 6d., with supplementary payments for additional quantities in certain cases.

The dispensing fee for elastic hosiery and trusses varies with the measuring and fitting services required. For the supply and repair of elastic hosiery, the range is 1s. 1d. to 3s. 7d., and for trusses, it is from 1s. 1d. to 15s. 7d.

†On-cost and container allowances are in practice calculated on the monthly totals of ingredient cost and number of prescriptions dispensed by the pharmacist.

21. It is obvious that the financial control of the supply of drugs and appliances is both complex and confusing; it must also be very expensive. We understand that about 1,400 staff are employed by the Joint Pricing Committees at an annual cost of £600,000 and that both pharmacists and doctors are compelled to do a great deal of work to comply with the regulations. Unfortunately elaborate systems of this kind seem indispensable to enterprise on a national scale.

CHAPTER 2
MEASURES ALREADY TAKEN TO CONTROL COSTS

22. The problem of keeping the size of the drug bill within reasonable bounds is not a new one. Under the National Health Insurance Scheme which was inaugurated in 1912 it was found necessary at an early stage to take administrative action to control costs. Doctors were precluded from prescribing preparations which were not drugs and a special committee "on the definition of drugs for the purpose of medical benefit" was appointed to advise on what constituted a drug. Practitioners were urged to prescribe with economy and copies of a National Formulary were issued to them with notes for their guidance in prescribing. They were also provided with copies of a special Memorandum on Prescribing with advice on such matters as the choice of drugs and the quantities to be ordered, and with a list of proprietary preparations and their chemical equivalents. A copy of the Department's Drug Tariff was also sent to them for general information.

A special procedure was introduced to investigate excessive prescribing by individual doctors who became liable to have sums withheld from their remuneration if the charges against them on this account were proved.

A complicated arrangement, known as the "floating sixpence", which provided doctors with a financial incentive to prescribe economically, featured in the original N.H.I. scheme. Under that arrangement 2s. out of an overall annual capitation fee of 9s. was set aside to form a drug fund. If in any area the cost of drugs fell below an average of 2s. per head the difference up to a maximum of 6d. a head was added to the remuneration of the doctors in the area. Where the cost in any area exceeded 2s. per head, the pharmacists' accounts were scaled down. The scheme was abolished in 1920 as unsatisfactory and has not been revived.

23. Much of the action taken to control the drug bill under the National Health Service has been based on the measures adopted under the earlier scheme. An account is given in the following paragraphs of the special steps taken by the Minister of Health since 1948.

Prescribing of drugs in the experimental stage or in short supply

24. During 1949 the Minister sought the advice of the Standing Medical Advisory Committee on the question of limiting the prescribing of very expensive drugs and medicines which were still in the experimental stage and in short

supply. A similar approach was made to the Committee in relation to the prescribing of drugs and medicines of doubtful value or of an unethical character and of unnecessarily expensive brands of standard drugs.

The Committee's advice was that there should be three stages in the prescribing of the first group of drugs, i.e. those in the experimental stage or in short supply. During the initial period of investigation while the value of the drug was being ascertained, the Committee thought that no prescribing should take place. During the ensuing period after a drug's value had been proved but when it was in short supply, it should be available at certain designated centres only. During the third period when supplies of the drug were unlimited, the Committee thought that, while there should be complete liberty of prescribing, general practitioners should be given special advice about it.

Cortisone preparations which were released for general prescription in December 1955 went through these stages.

The Committee felt that the prescribing of drugs of doubtful value and of unnecessarily expensive brands of standard drugs required careful study and that a special Committee of the Central Health Services Council should be set up for this purpose.

Joint Committee on Prescribing

25. The Joint Committee on Prescribing was accordingly set up by the Central and Scottish Health Services Councils in 1949. In the first place it submitted an interim report as a result of which letters were sent to all general practitioners asking for their co-operation in avoiding excessive prescribing and inviting their attention to the Committee's view that much unnecessary expenditure had been due to the prescribing of proprietary brands—particularly those which were widely advertised—instead of standard drugs.

26. In 1950 the Joint Committee submitted a second interim report in which they recommended that there should be no absolute restriction of the general practitioner's right to prescribe any drug which he considered necessary for the treatment of his patients. They recommended that all standard drugs should be freely prescribable but that doctors should not prescribe proprietary preparations which were publicly advertised. They classified other proprietary preparations into six categories:

"(1) New drugs of proved therapeutic value but which are not yet standard.

(2) Proprietary brands of standard drugs, singly or in combination.

(3) Standard preparations, and new remedies of proved value, in elegant form or vehicle.

(4) Qualitative and/or quantitative modifications in the composition or combination of standard preparations, or new remedies of proved value, which are not accepted as therapeutically superior to preparations included either alone or in combination in the British Pharmacopoeia, the British Pharmaceutical Codex or the National Formulary.

(5) Preparations not in the British Pharmacopoeia, the British Pharmaceutical Codex or the National Formulary which, in the Committee's view, have not been proved of therapeutic value.

(6) Preparations which are a combination of (4) and (5)."

The Committee advised that preparations in category (1) should be freely

prescribable; that preparations in categories (2), (3) and (4) should be prescribable subject to satisfactory price arrangements with the manufacturers; and that preparations in categories (5) and (6) which consisted of or contained drugs of doubtful value should not be prescribable.

27. In accordance with the Joint Committee's recommendations letters were sent to general practitioners asking for their co-operation in securing economy and enclosing a list of publicly advertised proprietary preparations which, the Committee had advised, should not be prescribed; but no absolute ban was imposed on their prescription.

The Joint Committee then classified proprietary preparations into the various categories they had suggested and lists were subsequently sent to doctors of those preparations falling into category (1), which the Committee thought should be prescribable under the Health Service, and categories (5) and (6), which, in their view, ought not to be prescribed.

28. During the next three years, the Joint Committee classified all proprietary preparations known to be available for prescribing, some 5,000 in number. Manufacturers were informed in confidence of the classification of their products and given an opportunity to make representations to the Committee if dissatisfied.

The Committee have from time to time supplied the Minister and the Secretary of State for Scotland direct with classified lists of proprietary preparations. This has enabled the Ministry's Cost Investigation Unit to start discussions with manufacturers on the prices of preparations in categories (2), (3) and (4).

After the Committee had classified all proprietary preparations then known to be available for prescribing, a small Standing Committee was established, with power to consult outside experts, to classify new preparations as they were introduced.

29. The Committee recently reviewed their categories in the light of extensive experience during which they classified several thousand preparations, and recommended:

(i) the introduction of a new category of "suspended judgment" for preparations with prima facie evidence of therapeutic value, but for which the Committee needed further evidence. This evidence was to be submitted within a period fixed by the Committee, who would then determine the final classification. The Committee thought that preparations should be freely prescribable while they were in this category;

(ii) the use of letters instead of numbers to indicate the categories, in order to avoid the misunderstanding which had arisen, both here and abroad, that the numbers previously used in this classification represented a decreasing order of therapeutic merit; and

(iii) minor revision of the definitions of their categories.

Exclusion of preparations which are not drugs

30. Returns from the Pricing Offices during 1948 and 1949 showed that some general practitioners were prescribing substances which were not drugs and in 1949 a Joint Sub-Committee of the English and Scottish Medical and Pharmaceutical Advisory Committees and of the Scottish General Practitioner Ad-

visory Committee was set up to advise on the classification of such borderline substances as foods, toilet preparations and disinfectants.

31. On foods they recommended that substances which are primarily nutritional and can be used by healthy persons to supplement their diet should be classed as foods, even when these substances can and may be used for medicinal purposes; that preparations whose primary purpose is to provide nourishment in established disease should be classed as drugs; that complex or compound preparations of which the main constituents are foods should be classed as foods even when they form the vehicle for drugs or medical agents; and they pointed out that a few substances may be classed as foods in some circumstances and drugs in others.

The Joint Sub-Committee also reviewed and classified a large number of substances in accordance with these principles.

32. On toilet preparations they recommended that, as it is unethical for a doctor to order a preparation of unknown or undisclosed composition, preparations used normally for toilet purposes, even if their composition is disclosed, should not be prescribed; and that certain proprietary toilet preparations, such as medicated soaps and barrier creams, should not normally be prescribed, if they might be used for routine toilet purposes.

33. The Joint Sub-Committee recommended that disinfectants should be regarded as drugs only when they are ordered in such quantities and with such directions as are appropriate for the treatment of an individual patient, either internally or externally; and that disinfectants should not be regarded as drugs if they are ordered for general hygienic purposes.

Copies of the Joint Sub-Committee's recommendations were circulated for the guidance of general practitioners who are liable under the regulations, subject to appeal, to have the cost deducted from their remuneration if they prescribe such substances.

Informative publications

34. A number of publications have been distributed by the Ministry containing guidance to enable the general practitioner to prescribe with economy.

35. *British National Formulary:* For the convenience of doctors a National Formulary has been compiled by a Joint Committee formed by the British Medical Association and the Pharmaceutical Society of Great Britain. The Formulary, a copy of which is sent to each doctor, lists a comprehensive range of drugs and compound preparations which may be ordered by short title. It contains an Appendix listing official equivalents for a number of comparable proprietary preparations and, for a number of other proprietary preparations, names of standard preparations which are reputed to have an analogous therapeutic effect. Since 1957, an alternative edition has been issued with more extensive notes for prescribers.

Doctors have not been required at any time to restrict their prescribing to preparations in the Formulary.

36. *Prescribers' Notes:* When the National Insurance medical benefit arrangements were in operation, doctors' representatives (through the Insurance Acts Committee of the British Medical Association) issued a memorandum showing doctors how they could prescribe effectively without undue cost.

It was thought that it would be helpful to doctors in the general practitioner service of the National Health Service if occasional Notes were prepared to bring to their notice information which might assist them to prescribe economically. After consultation with the profession the first set of "Prescribers' Notes" was prepared and sent to doctors in February, 1952. By the end of 1958, 24 issues had been made altogether. The main object of the Notes has been to bring to doctors' notice such points as the limitations of the uses of expensive new drugs (as advised in technical journals), other published clinical information about the cost of effective prescribing and economical packs of dressings.

37. *Comparative price lists:* In 1953, a list was issued to doctors showing the cost to the Department of National Formulary preparations and of a number of proprietary preparations and the quantities usually prescribed. In the case of certain proprietary preparations comparative prices were given for standard preparations shown in the National Formulary as identical with the proprietary preparations or reputed to have analogous therapeutic effects. Further revised statements of comparative costs were sent to doctors in 1955, in 1956 and in 1958.

Discipline

Investigation of excessive prescribing

38. If it appears to the Minister of Health that the cost of the drugs and appliances ordered or supplied by a doctor exceeded what was reasonably necessary for proper treatment, the Minister is empowered under Regulation 12 of the Service Committees and Tribunal Regulations, 1956* to refer the matter to the Local Medical Committee, an independent professional committee representing local doctors, for investigation.

39. Since March, 1950, a prescribing investigation unit, staffed by employees of the Joint Pricing Committee, has examined prescriptions by doctors whose costs were above average, and has compiled factual information on the numbers and costs of such prescriptions. The primary purpose of these investigations is to enable the Minister's Regional Medical Officers to discuss in detail their methods of prescribing with the doctors concerned.

Regional Medical Officers pay such visits each year to about 900 doctors. Each doctor is given details of his prescribing costs compared with average costs for his area. The information provided includes figures showing the frequency of his prescribing, the average cost of his prescriptions and the average total costs for each person on his list. Particulars of some of the more costly drugs he has prescribed are also provided.

We are informed that as a result of these discussions most of the doctors visited have been able to reduce their prescribing costs. In the few cases where preliminary discussion has no effect, another visit is paid. Where the further visit results in little or no reduction in the doctor's prescribing costs, the matter is usually referred formally to the Local Medical Committee for investigation.

In cases where the Local Medical Committee finds that there has been excessive prescribing the doctors concerned have a right of appeal under the regulations to independent referees. If the decision of the Local Medical Com-

*Statutory Instrument 1956 No. 1077.

mittee is confirmed following such an appeal the regulations give authority for money to be withheld from the doctor's remuneration.

Routine circulation of doctors' prescribing statistics

40. In 1955 the Pricing Offices supplied statistics to Executive Councils for transmission to general practitioners showing the average cost of a doctor's prescribing compared with the average for his area. For the first time since 1939, when the circulation of similar information under National Health Insurance came to a stop, all doctors were given a basis for assessing and comparing their prescription costs.

The details circulated include the average cost of the doctor's prescriptions, the average cost per patient on his list, the average number of prescriptions per patient on his list, and the area and national averages for the same month.

Prescription charges

41. In 1952 the Government decided to exercise powers given under the National Health Service (Amendment) Act, 1949, (Section 16) to impose charges for prescriptions issued under the general pharmaceutical services. A shilling charge was introduced in June, 1952, in respect of each National Health Service prescription form dispensed, regardless of the number of prescriptions on the form. Charges were also imposed for elastic hosiery at the same rates as those introduced for the supply of elastic hosiery in hospitals (5/- and 10/-). Charges were made at hospitals for other appliances which were not supplied under the general pharmaceutical service.

The object of the charges was not only to reduce the net cost to the Exchequer directly by the amount of the charges paid by patients, but also indirectly by discouraging demands on doctors, e.g. for simple household remedies, which patients might reasonably be expected to buy for themselves.

Doctors were under no restriction as to the number of items they might order on one prescription form but, for the convenience of pharmacists and pricing officers, doctors had been asked not to order more than two items on a form. When the charges were introduced they were asked to continue to observe the practice.

42. In the first six months after the introduction of the charges the numbers of prescriptions dispensed by pharmacists decreased but this decrease was largely offset by a subsequent increase due, it was thought, to the effects of fogs and influenza. Although the annual number of prescriptions dispensed rose subsequently, the yield of the charges declined as doctors tended to write more prescriptions on each form.

The amount raised from the charges received by pharmacists was £4·6 mils. in 1952/53, £6·4 mils. in 1953/54 and £6·1 mils, in 1954/55.

43. On the 1st December, 1956, a change was made in the basis of the charge as part of other measures to meet the economic situation. From that date a shilling charge became payable on each item supplied, irrespective of the number of prescriptions per form. The charges for elastic hosiery remained unchanged.

During the first twelve months of the new charges the number of prescriptions issued fell from 233 millions for the preceding twelve months to 204·5

millions, a decrease of 12%. In the same period the number of prescriptions issued per person fell from 5·6 to 5·0. Nevertheless, the total cost increased from £57 millions to £59·6 millions. The charges received by pharmacists increased to £11·2 millions in 1957/58.

Regulation of the cost of pharmaceutical products including proprietaries

44. Prior to our appointment a start had been made on an investigation of the costs of and profits on the manufacture of selected pharmaceutical products supplied under the National Health Service with a view to ensuring that no more than fair and reasonable prices were paid for these products. These investigations covered four main fields, viz:

(i) the general level of profit earned in the secondary manufacture and distribution of unbranded standard drugs and preparations;
(ii) the prices of selected proprietary preparations;
(iii) the costs of certain widely used basic drugs (antibiotics, hormones, vitamins and insulin); and
(iv) the prices of surgical dressings and plasters.

45. The investigation into the level of earnings in the secondary manufacture and compounding of unbranded standard drugs and preparations and the earnings on wholesale distribution was concluded early in 1955. The results did not suggest that the general level of prices in this field was excessive, or that intervention by the Department was necessary.

46. In the second and third fields of enquiry, which were inter-related, the initial attempts at cost investigation were suspended when the Association of British Pharmaceutical Industry offered to formulate a comprehensive scheme for the voluntary regulation by manufacturers of the prices of all proprietary preparations classified by the Joint Committee on Prescribing as prescribable subject to satisfactory price arrangements being made. After long negotiations an agreed scheme came into operation in June 1957 for a trial period of three years. We discuss this scheme in more detail in a later section of our report (paragraphs 221-223).

CHAPTER 3
FURTHER ACTION RECOMMENDED IN OUR INTERIM REPORT

47. Arising out of the Minister's request that we should consider whether it was possible to make some interim recommendations, we submitted our interim report on 5th May, 1958, and this was subsequently published in June, 1958.

48. In that report we discussed the role of the general practitioner in relation to prescribing under the National Health Service. The evidence before us led us to conclude that despite the exacting nature of their work general practitioners had discharged the duty of prescribing drugs at the public expense

on the whole in a responsible manner. It seemed to us nevertheless that some economy was possible. We felt that it would help doctors if more could be done to provide them with essential information about the cost and therapeutic value of the drugs available to them. In our interim report we made a number of suggestions for providing the practitioner with more adequate information to help him in his prescribing.

Our recommendations were as follows:—

(i) The attention of Medical Schools should be directed to the importance of the British National Formulary and the Minister of Health should supply free of charge copies of the alternative edition to all clinical students, general practitioners and hospital doctors;

(ii) The Minister should confer with the British Medical Association and the Pharmaceutical Society with a view to the production of a comprehensive prescribing handbook which should include information about comparative costs of standard drugs and proprietary preparations;

(iii) The law should be amended, if necessary, to compel manufacturers to indicate in literature circulated to doctors in the National Health Service the retail price of the advertised product;

(iv) The Minister should direct Executive Councils who supply drug houses and advertising agencies with copies of medical and pharmaceutical lists to discontinue the practice;

(v) "Prescribers' Notes" should be circulated to all clinical teachers, consultants, hospital doctors and final year students as well as to general practitioners. The Notes should be issued more frequently and should be expanded in scope;

(vi) The circulation to doctors of up-to-date prescribing statistics should be speeded up and informal visiting by Regional Medical Officers increased;

(vii) The Minister should institute forthwith an investigation by experts into the question of full pricing of all prescriptions;

(viii) In order to attract recruits of the right calibre the status of Regional Medical Officers should be improved and consideration given to the adequacy of their remuneration;

(ix) The British Pharmacopoeia Commission should be asked to review the principles on which the selection of approved names is based;

(x) Before putting a new drug on the market manufacturers should ask the British Pharmacopoeia Commission to give it an approved name which should then appear prominently on labels and advertising literature.

49. We also touched on two other aspects of the problem, namely, the statistical information at present available on the cost of the general pharmaceutical services and the question of quantities prescribed by general practitioners.

Our preliminary enquiries convinced us that the statistical information at present available within the Department did not provide an adequate basis for a complete survey of the factors contributing to increased costs and that if

such a survey was required it would be necessary to improve this information. We return to the point in paragraphs 103-7 and 302-6 below.

Information with which we had been provided about the cost of the pharmaceutical services indicated some increase in recent months in the quantities of drugs ordered on each prescription. We were disturbed by this problem of larger quantities and examined a number of suggestions for reducing waste involved in the practice. Faced with two factors viz. the shortness of the period available to us for judging the trends in prescribing after the imposition of the new charge; and the administrative difficulties involved in restricting quantities, we decided to defer a recommendation on this aspect of our remit and to review the matter in this our main report.

50. We note with pleasure that the Minister of Health has acted on most of our interim recommendations.

For example, we are told that copies of the alternative edition of the British National Formulary have been sent to all clinical students, general practitioners and hospital doctors (rec.(i)); Executive Councils have been directed by the Minister not to supply medical and pharmaceutical lists to firms and agencies (rec.(iv)); an expert investigation into full pricing is under way, the results of which should be available shortly (rec.(vii)); and the Minister has noted our recommendation (viii) about remuneration of Regional Medical Officers.

The Minister is pursuing our remaining recommendations with the bodies concerned. The provision of a comprehensive prescribing handbook in loose-leaf form and incorporating the Formulary (rec.(ii)) has been accepted in principle and details of production are under discussion. The pharmaceutical industry is apparently responding to the recommendation (iii) that prices should be indicated in drug literature. Our recommendations about the circulation of "Prescribers' Notes" (v) and about prescribing statistics and visits by Regional Medical Officers (vi) are under review.

We have ourselves taken further evidence on approved names ((ix) and (x)) and return to the subject in paragraph 210 below.

PART II

CHAPTER 4
THE DRUG BILL IN PERSPECTIVE

The Drug Bill in Relation to the Total Cost of the National Health Service

51. The gross cost of prescriptions dispensed under the National Health Service has risen considerably since the inception of the Service and continues to rise as the following figures reveal:

Table 1

	£
1949/50	31,674,000
1950/51	36,905,000
1951/52	42,404,000
1952/53	44,736,000
1953/54	43,532,000
1954/55	47,485,000
1955/56	52,148,000
1956/57	56,412,000
1957/58	62,765,000

52. These figures* show that within the space of nine years the cost of prescriptions has doubled. Before looking into the factors contributing to this high cost it is desirable to consider the Drug Bill in perspective in relation to the cost of the National Health Service as a whole and to attempt, within the limitations of the data available, to analyse its main constituent items.

53. In discussing the cost of the pharmaceutical services we have encountered difficulties which also troubled the Guillebaud Committee of enquiry into the cost of the National Health Service, namely the lack of statistical information. Mr. Guillebaud felt this want so keenly that he arranged through the National Institute of Economic and Social Research for Professor Titmuss and Dr. Abel-Smith to prepare an economic analysis of the National Health Service. Their work, which was carried out under considerable pressure and even so took over two years, was published in 1956. It covered the period 1949/50-1953/54.

54. The present Committee has not been able to call on similar assistance. It has had the benefit of a further published study by Mr. J. P. Martin Ph.D.† and of some analyses by the Ministry of Health, but many of the points which we would like to have examined in a quantitative way have had to be left on

*These figures and those that follow exclude the cost of prescriptions dispensed by dispensing doctors in view of the relatively small sums involved. We return to the question of dispensing doctors' costs in paragraphs 307-315 below.

†"Social Aspects of Prescribing" by Mr. J. P. Martin, Ph.D.

one side or evaluated in only general terms. We return to the question of the inadequacy of the statistical data available in paragraphs 103-7 and 302-6 below.

55. The point should perhaps be made here that, having regard to the fall in the value of money measured in terms of the Consumer Price Index prepared by the Central Statistical Office [1949/50(100), 1957/58(137)], the drug bill for 1957/58, if based on 1949/50 values, would have been £45·81 millions. This represents a real increase of about 45% since 1949/50 compared with the increase of just under 100% to £62·76 millions.

56. We have attempted in Table 2 below to compare, on the basis of information published by the Ministry of Health, the total cost of the pharmaceutical services for the years 1949/50 to 1957/58 with the total cost of the National Health Service. Comparison is also made with the respective total costs of the general medical and dental services, the hospital and specialist services and the local health services, which in 1957/58 together accounted for over 80 per cent of the total cost of the Health Service.

Table 2

Total Cost of Pharmaceutical Services compared with certain other services 1949/50-1957/58

to nearest £mil.

	Pharmaceutical	General Medical	General Dental	Hospital and Specialist	Local Health	Total N.H.S.
1949/50	32 (100)	42 (100)	43 (100)	213 (100)	29 (100)	403 (100)
1950/51	35	42	40	229	33	413
1951/52	45	42	33	245	36	434
1952/53	48	76	28	256	38	486
1953/54	46	52	28	262	43	473
1954/55	49	53	30	278	45	495
1955/56	52	55	36	305	46	535
1956/57	60	58	40	334	50	585
1957/58	64 (200)	63 (150)	43 (100)	355 (167)	56 (193)	626 (155)

57. This table shows that, with the exception of the general dental service, the total cost of each of the services covered has increased steadily since 1949/50. The substantial reduction in cost of the general dental service in the early years was due to the measures taken by the Minister to check individual professional earnings which in many cases were in excess of those which had been intended. The other notable exception, the large increase in the total cost of the general medical services to £76m. in 1952/53, was due to the inclusion in that sum of about £25m. arrears for earlier years in respect of the Danckwerts award.

58. During the period 1949/50-1957/58 the total cost of the pharmaceutical service shews a relatively greater increase than most of the other services. Taking 1949/50 as the standard year, the total cost of the pharmaceutical services increased by about 100% during the period as compared with 50% for the general medical services, 67% for the hospital and specialist services, 93% for the local health services and 55% for the National Health Service as

a whole. The general dental service after some decline in total cost is now running at the same level as in 1949/50.

59. In the case of the pharmaceutical service the total cost rose considerably up to and including 1951/52. Indeed, the increase in the cost of the service during that period amounted to almost as much as the increase during the succeeding five years.

60. If 1951/52 is taken as the standard year it will be observed that during the period to 1957/58 the rate of increase in the cost of the pharmaceutical service was certainly no greater and, if anything, less than that for any of the other services (except the general dental service to which special circumstances applied), viz.

Table 3

	Pharmaceutical	General Medical	General Dental	Hospital and Specialist	Local Health	Total N.H.S.
1951/52	100	100	100	100	100	100
1957/58	142	150	130	145	156	144

61. In Table 4 we have attempted to shew the proportions of the total cost of the Health Service absorbed by these services over the same period.

Table 4

Proportion of total cost of N.H.S. spent on these services
1949/50-1957/58

	Pharmaceutical %	General Medical %	General Dental %	Hospital and Specialist %	Local Health %	Other* %	Total N.H.S. £mil.
1949/50	8	10½	10¾	52¾	7¼	10¾	403
1950/51	8½	10¼	9¾	55½	8	8	413
1951/52	10½	9¾	7½	56½	8¼	8	434
1952/53	9¾	15¾	5¾	52¾	8	8¼	486
1953/54	9¾	11	6	55½	9	8¾	473
1954/55	10	10¾	6	56¼	9	8	495
1955/56	9¾	10¼	6¾	57	8½	7¾	535
1956/57	10¼	10	6¾	57	8½	7½	585
1957/58	10¼	10	6¾	56¾	9	7¼	626

*Including supplementary ophthalmic service, doctors' compensation, superannuation payments, etc.

62. While the proportion attributable to the pharmaceutical service increased in the early years of the Health Service, i.e. from 8% to 10½% from 1949/50 to 1951/52, the table shews that this proportion has continued at practically the same level from 1951/52 up to 1957/58 (10¼%). The proportions attributable to the other services also shewed little change during this latter period, viz., general medical services (9¾% compared with 10%), general dental service (7½% and 6¾%), hospital and specialist services (56½% and 56¾%), and local health services (8¼% and 9%).

63. These figures do not support the general belief that the cost of the pharmaceutical service is increasing at a much faster rate than that of other branches of the National Health Service or that it is absorbing an increasing share in the total cost of the Service.

Analysis of Drug Bill and General Factors Bearing on Costs

64. Table 5 below shews for each of the financial years 1949/50-1957/58 the gross cost of prescriptions together with the total number of prescriptions and the average cost per prescription, the average cost per patient on practitioners' lists and the average number of prescriptions per person.

Table 5

Year	Total No. of Prescriptions Dispensed by Pharmacists mils.	Average Gross Cost per Prescription	Average Gross Cost per Patient on Drs'. Prescribing Lists	Average frequency of Prescriptions per Person	Gross Cost of Prescriptions £mils.
1	2	3	4	5	6
1949/50	206·4	3s. 1d.	16s. 2½d.	5·29	31·67
1950/51	225·1	3s. 3½d.	18s. 7d.	5·67	36·90
1951/52	220·6	3s. 10d.	£1 1s. 1d.	5·49	42·40
1952/53	219·4	4s. 1d.	£1 2s. 6½d.	5·53	44·74
1953/54	212·9	4s. 1d.	£1 2s. 0½d.	5·39	43·53
1954/55	222·9	4s. 3d.	£1 3s. 8½d.	5·57	47·48
1955/56	228·5	4s. 6½d.	£1 5s. 8½d.	5·63	52·15
1956/57	216·0	5s. 2½d.	£1 7s. 5d.	5·24	56·41
1957/58	209·1	6s. 0d.	£1 10s. 1d.	5·01	62·76

65. The table shews that the gross cost rose from £31·67 millions to £62·76 millions; the total number of prescriptions from 206·4 millions to a peak of 228·5 millions in 1955/56 (falling in 1957/58 to 209·1 millions); the average cost per prescription from 3s. 1d. to 6s. 0d.; the average cost per patient from 16s. 2½d. to 30s. 1d.; and the average frequency from 5·29 to 5·63 in 1955/56 (falling to the abnormally low figure of 5·01 in 1957/58). The sharp fall during 1957/58 in the total numbers of prescriptions and average frequency reflects the imposition in December 1956 of a new basis of charges.

(*i*) *Statistical inquiry by Dr. Abel-Smith and Professor Titmuss*

66. The last detailed study of the causes of the increase in the cost of the pharmaceutical service was that undertaken by Dr. Abel-Smith and Professor Titmuss as part of their analysis of the cost of the National Health Service on behalf of the Guillebaud Committee.

67. Abel-Smith and Titmuss attempted a detailed study of the causes of the rise in the gross cost of the pharmaceutical service between 1949/50 and 1953/54, the results of which are summarised in a table which is reproduced below.

Table 6

Factors accounting for the rise in the cost of the pharmaceutical service between 1949/50 and 1953/54 (England and Wales)

Cause	*Percentage of increase in cost attributable to each cause*
Changes in rates of payment to pharmacists	−11
Increased quantity of ingredients	36
Changed composition of proprietaries and non-proprietaries	35
Other factors	40
Total	100

68. As a result of their study Abel-Smith and Titmuss concluded that during the period 1949/50-1953/54 about one-third of the increased cost was due to increased quantity. About one-third was due to the increased use of proprietary preparations, reflecting to some extent the continuing introduction of new products. Chemists' remuneration declined by about one-tenth during this period. The balance of 40% was due to other unspecified factors.

69. The conclusion drawn by the Guillebaud Committee was that the two main causes of the increased cost of the pharmaceutical service during this period were firstly, the growing use of new and expensive drugs (particularly the antibiotics), whether in the form of proprietaries or otherwise, and secondly, the increased quantity of drugs prescribed.

70. As explained in para. 54 above it has not been possible for this Committee to arrange for the special statistical inquiry which would be necessary for a detailed analysis of the increased cost of the pharmaceutical service. We have therefore been limited in our statistical investigation by the nature of the material available to us. For this reason we do not propose to attempt to measure precisely the influence which particular factors have exerted on increased costs but simply to point to the existence of such factors and to discuss in a very general way the relative importance of their effect on the drug bill.

(*ii*) *Factors affecting movements in particular years*

71. The statistical analyses provided by the Department about prescribing are produced from prescriptions dispensed by about 90 pharmacists representing some 0·7 per cent of chemist-contractors in the Health Service. We are informed that the pharmacists were selected so as to be reasonably representative geographically of the volume and nature of dispensing in England and Wales. The primary reason for selecting these samples was to determine whether payments made to pharmacists on the basis of averaging prescription costs were in fact adequate. As these samples were available, a proportion of them have been used to obtain information dealing with the problem of prescribing. The Department recognise the inadequacy of the present sampling arrangements and the selection of the prescriptions for them is being reviewed on statistical advice.

72. An analysis of estimates based on the Department's sample of prescriptions suggests that certain factors had an important influence on costs from year to year.

73. The considerable increase in gross costs from £31·7 millions in 1949/50 to £36·9 millions in the following year was associated with a substantial increase in the total number of prescriptions which seems to have been due among other things to an influenza epidemic in early 1951. Between 1950/51 and 1951/52 the increase in costs continued unabated in spite of a decrease in the numbers of prescriptions. During this period a new antibiotic, chloramphenicol, became available for general prescription. The total cost of prescriptions issued for this drug alone during the first twelve months after its general release was estimated at £1¾ millions. These factors, together with more prescribing of other expensive drugs and increases in the prices of certain drugs and dressings, constituted a substantial part of the general rise in costs, but do not account for all of it.

74. While the continuing increase in the cost of the drug bill during the next three years was apparently due in part to the continued prescribing of new and expensive drugs, the rate of increase abated for a number of reasons. During 1952, for example, the cost of supplying dressings on prescription fell by about 16%. The introduction of the shilling charge per form in June 1952 produced a significant fall in the numbers of prescriptions up to the end of the year but this was offset by the effects of fog and influenza. Another contributory factor to the slower rate of increase during this period were the new arrangements introduced in 1953 providing that payment for certain proprietary preparations in frequent demand should be based on the net price of an agreed size of pack.

75. After November 1954, doctors were able for the first time to prescribe some expensive new preparations which had previously been available only in limited quantities and reserved for supply through hospitals. Chlortetracycline (aureomycin) and oxytetracycline (terramycin) became generally available in November 1954; tetracycline in May 1955; and cortisone and hydrocortisone in December 1955. Prednisone and prednisolone became generally available on 1st February 1957. The total cost of prescriptions issued for cortisone and hydrocortisone during the twelve months after their release is estimated at £2·4 millions. A further estimate shows that the total cost of prescriptions for the corticosteroids during the six months after the release of prednisone and prednisolone (February to July 1957) rose to about £2·5 millions, that is, an annual rate of some £5 millions (see also paragraph 86 below). A sample analysis of prescriptions during the period March-June 1958 showed that more prescriptions (about 25% more than in the same period in 1957) were being issued for the corticosteroids. The analysis suggested that the total cost of prescriptions for this group in 1958/59 would be about £6 millions. The prescribing of these expensive new drugs and increases in the container allowance and dispensing fees for pharmacists added to the drug bill during 1956/57 and 1957/58.

76. Despite a significant drop in the numbers of prescriptions dispensed during 1957/58 the total cost continued to rise due among other things, it would appear from the Department's estimates, to the prescribing of increased quantities.

(iii) Analysis of payments to pharmacists

77. Table 7 below shews the breakdown of the gross payments made to pharmacists during the period 1950/51-1957/58.

Table 7

(in £000's)

	1950/51	1951/52	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58
Dispensing fees and payments for services outside normal hours	11,100	12,830	12,115	11,535	11,810	11,765	15,325*	13,080*
Cost of ingredients and allowances for containers	18,800	24,140	27,300	26,600	28,630	30,565	34,905	39,490
On-cost	3,600	6,950*	6,530	6,370	6,870	7,345	8,345	9,535
Total gross payments to pharmacists	33,500	43,920	45,945	44,505	47,310	49,675	58,575	62,105

*Includes arrears for earlier years.

78. During the eight years from 1950/51 to 1957/58 the gross payments to pharmacists increased by about 85% or about £28½ millions. The bulk of this increase was accounted for by a rise in the cost of ingredients and container allowances (72%), the balance being divided between dispensing fees etc. (7%), and on-cost (21%). After taking into account container allowances, which increased from £1·1 millions in 1950/51 to £1·3 millions in 1957/58, the cost of ingredients increased from £17·7 million to £38·1 million.

79. The Ministry have provided us with provisional indices of the prices of proprietary and non-proprietary drugs used in the general practitioner services in 1954. We have also seen an index of the price of medical specialities (proprietary preparations) drawn up by the Association of British Pharmaceutical Industry and an index prepared by the "Chemist and Druggist" of the price of standard drugs. Although the constant introduction of new products and other complicating factors detract from the reliability of such indices, the evidence suggests that in recent years the tendency has been for the cost of many individual drugs to decline slightly. Our conclusion is that the increase in the drug bill is due largely to the greater cost of new and more expensive drugs and to the prescribing of increased quantities. We have already noted the relative parts played by increased dispensing fees and on-cost.

80. The point is not often realised and we think it worth stressing that just over 35% of the so-called drug bill goes in remuneration and on-costs of retail pharmacists (see paragraph 269). The actual drug ingredients for which the Exchequer pays comprise about 65% which itself includes an unknown element of manufacturers' and wholesalers' overheads and profits.

81. It should perhaps be noted in passing that according to a recent estimate the annual drug bill includes about £850,000 in respect of purchase tax paid on medicinal preparations prescribed under the Health Service (see paragraphs 336-339). This sum includes the pharmacist's 25% on-cost which is payable on purchase tax.

(iv) General factors bearing on costs

82. We now propose to consider a number of general factors which in our view have an important influence on the cost of prescriptions.

(a) New Drugs

83. The National Health Service was introduced at a time when rapid advances in pharmacology led to the discovery and development of many expensive new drugs. The large-scale production of penicillin during the war opened the way to the discovery and marketing of a large and ever-growing range of antibiotics. The range of synthetic drugs has widened and the use of cortisone and other corticosteroids is increasing. These new preparations are all extremely complex substances and the costs of research and of the intricate plant and equipment involved in their production are inevitably very high.

84. Many of the new preparations are of inestimable value and have added considerably to the general practitioner's armamentarium. Diseases which were formerly unresponsive to other forms of treatment have been brought under effective control by their use in patients' homes, saving innumerable hospital beds. Tuberculosis and pneumonia are examples that readily come to mind. The same applies to many cases of severe asthma, while patients with chronic bronchitis can be kept in better health and more able to continue or resume work. It adds to the drug bill, but treatment in hospital is many times more expensive.

85. Drugs are marketed either under proprietary names or as unbranded standard drugs. Since the great majority of these new drugs were introduced by the manufacturers as proprietary preparations and remain as such, the tendency for general practitioners to prescribe more proprietaries and fewer unbranded drugs is not surprising. The following table, based on information provided by the Ministry of Health, shews the steady growth in the past ten years in the prescription of proprietary preparations:

Table 8

	Proportion of all Prescriptions	
	Total Numbers	*Ingredient Costs*
N.H.I.* January-December 1947	7%	24%
N.H.S. January-December 1950	18%	44%
N.H.S. 1956	40·5%	66%
N.H.S. 1957	48%	70%

*These figures relate to N.H.I. scripts only, i.e. 68,000,000 compared with some 220,000,000 under the National Health Service and exclude the much more expensive prescriptions written for the large element of the population not covered by N.H.I.

86. In 1947, 7% of all prescriptions under the N.H.I. were for proprietaries. This proportion in the N.H.S. had risen by 1957 to just under 50%. In the same period the value of proprietary preparations rose from about one quarter to over two-thirds of the total cost of prescriptions, measured by the cost of ingredients. According to a recent estimate two groups of drugs, namely the antibiotics and hormones (including the corticosteroids), are between them responsible for almost 35% of the total ingredient cost of proprietary preparations. It is perhaps significant that while the proportion attributable to anti-

biotics has increased from 20-24% since 1953 the proportion applicable to the group including the corticosteroids is estimated to have increased to about 11% since the corticosteroids first became available for prescription by general practitioners (December, 1955).

87. More proprietary preparations are prescribed not so much because general practitioners prefer them to the unbranded type, but because an increasing number of drugs are today available only in proprietary form. The drugs available only in proprietary form include many that have been given Approved Names and some that are also described in recognised works of reference.

88. We have been told in evidence that the trend towards proprietaries is more pronounced abroad and that in France, Germany and Italy for example, the proportions are as high as 75%, 85% and 90% respectively.

89. In our view the coincidence of these two sets of circumstances, viz., the introduction of a free and comprehensive Health Service for all and the discovery and large-scale production of valuable but expensive drugs, has been the main factor contributing to the present cost of prescriptions.

(b) Population changes

90. Since 1948 the total population of England and Wales has increased from 43·5 to 45·1 millions. Most of these additional 1½ million persons take advantage of the pharmaceutical service. Account must be taken also of those people who since 1948 have overcome their original distaste for a state health service and are now accepting N.H.S. prescriptions as a matter of course. We are told that the number of persons on doctors' lists increased by about 3·5 million from 31st December, 1948 to 1st July, 1958. These figures must be treated with some reserve as we are informed that the lists were not altogether accurate. A study of the structure of the population over the same period shews a definite increase in the aged. Since 1948, for example, the number of persons aged 65 and over has increased by about 13½% and the expectation of life of the new-born by two years.

91. Complaints are made from time to time that the State bears unnecessary expense for treatment given to foreigners under the N.H.S. We are told that in principle medical treatment under the Health Service is available to all persons in the country, including foreign nationals, subject to payment of the normal charges; but that aliens are not normally allowed to enter the country for the sole purpose of obtaining free medical treatment.

We inquired to what extent the drug bill was affected. While no precise figures are available, we are told that the total number of foreigners coming to this country does not suggest that the additional cost either to the N.H.S. as a whole or within the narrower compass of the drug bill itself can be anything but marginal.

We have no alternative but to accept this appraisal.

92. The increase in total population within the Service, the increasing proportion of elderly people in the community and the priority given as a matter of policy under the Health Service to the treatment of young children have all tended to raise costs by increasing the demands upon the general medical and pharmaceutical services. In parallel with these increasing demands the number

of general practitioners in the Health Service has risen from about 17,000 in 1951 to 20,134 in 1957 and the number of pharmacists (this excludes drug stores and suppliers of appliances) from 12,786 in 1949 to 13,252. These factors, together with the gradual re-distribution of medical manpower, have made facilities for medical treatment more generally accessible.

(c) Effect of charges

93. It is difficult to assess the precise effect which the imposition of charges has had on the cost of the pharmaceutical service. The following table shews for the period 1950/51 to 1957/58 the gross and net payments to pharmacists after allowing for charges:

Table 9

£mils.

	1950/51	1951/52	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58
Gross payments to pharmacists	33·5	43·9	45·9	44·5	47·3	49·7	58·6	62·1
Less charges	—	—	4·6	6·4	6·1	6·8	7·6	10·8
Net payments to pharmacists	33·5	43·9	41·3	38·1	41·2	42·9	51·0	51·3

94. The declared objects of the charges were to raise additional revenue and to prevent abuse. While we propose later in our report to consider the merits and demerits of a charges scheme (see Chapter 14 below), it is sufficient for the moment to note that the deterrent effect of the shilling charge, whether per form or per item, has not been particularly marked. Gross payments to pharmacists have continued to rise in spite of the charges. The introduction of the charge per form in June 1952 was followed by a temporary decline in the numbers of prescriptions dispensed. The average cost per prescription increased.

95. The new charge per item introduced in December 1956 failed to prevent a rise in the drug bill. The new arrangements were followed by:

(i) A fall in the numbers of prescriptions (207·2 millions in 1957 compared with 228·9 millions in 1956);

(ii) A decrease in the number of prescriptions per form (1·53 compared with 1·72);

(iii) A decrease in the frequency of prescriptions per person (4·98 compared with 5·58);

(iv) An increase in the average cost per prescription (5s. 10½d. compared with 4s. 11½d.).

96. The increase of 11d. in 1957 was about two and a half times the average annual increase in cost per prescription during the preceding years since 1949. While part of this was due to an increase in dispensing fees payable to chemists,

we may reasonably conclude that much of it was due to the ordering of increased quantities per prescription.*

In short doctors appear to have reacted to the imposition of the new charges by prescribing less frequently but ordering larger quantities.

(v) *Social factors influencing regional variations in prescribing costs*

97. At an early stage in our proceedings we were supplied with information relating to 1956 and listing those Executive Council areas with the highest average cost of prescriptions per person on doctors' lists, those with the highest numbers of prescriptions per person and those with the lowest average costs and frequencies. It seemed to us that it might be useful to investigate why, for example, the average cost per person varied among county borough Executive Councils from £1 1s. 5½d. to £1 18s. 7½d. (15s. 5½d. to £2 0s. 11½d. in the case of county Executive Councils) and the average frequency from 4·21 to 8·99 for county boroughs (3·49 to 8·49 for counties).

For 1957 the average cost per person ranged from £1 2s. 11½d. to £2 2s. 7½d. in the county boroughs (17s. 11½d. to £2 5s. 4½d. in the counties); and the average frequency from 3·93 to 8·03 (and 3·25 to 7·54). The ten county borough Executive Councils with the highest average cost in 1956 were at the top of the list again in 1957. Of the ten with the highest frequencies in 1956, nine were in the first ten in 1957. With one or two exceptions only, the same applied in the case of the county boroughs with the lowest averages and in the case of the counties.

The tables at Appendix V of the report indicate the respective areas with highest and lowest costs and frequencies.

98. In this aspect of our inquiry we had the advantage of a published statistical

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*This would seem to be confirmed by provisional calculations made by the Ministry of Health (on the basis of their sample) relating to medicines accounting for about two-thirds of all prescriptions, viz.,

Average quantities ordered per prescription

	Tablets		Mixtures, linctuses etc.
	Proprietary	Non-proprietary	Non-proprietary
1956	45·4(100)	51·3(100)	11 fl. oz.(100)
1957	49·3	57·2	11·3 fl. oz.
1958	49·5(100)	57·2(111½)	11·6 fl. oz.(105½)

The Ministry's calculations shew that, so far as proprietaries in tablet form were concerned, doctors prescribed on average 9% more in quantity per prescription in 1958 than in 1956. For non-proprietary tablet prescriptions the average increase in quantity prescribed over the same period was 11½% and for non-proprietary mixtures, linctuses etc. 5½%.

It is perhaps significant that for both proprietary tablets, which represent about one-half of all orders for proprietaries, and non-proprietary tablets, which represent about one-third of non-proprietary orders, the increase took place almost entirely in 1957 and that quantities prescribed remained at the same level in 1958. It might be inferred from this that doctors got into the habit of prescribing increased quantities during 1957, the first full year after the imposition of the new charge per item, and continued to prescribe at this higher rate during 1958.

study undertaken by Dr. J. P. Martin and entitled "Social Aspects of Prescribing" which Dr. Martin submitted to the Committee in evidence together with a supplementary memorandum (by Dr. Martin and Mrs. Sheila Williams). In his very useful work, Dr. Martin has concentrated on the social rather than the medical aspects of prescribing. He has studied the prescribing behaviour of general practitioners and the environment within which they prescribed. Using statistical techniques, he has attempted to assess the part played by each of fifty-three variables which might influence prescribing. Having selected 67 medium-sized county boroughs, each separately administered by an Executive Council, Dr. Martin assembled and analysed data grouped under six main headings: information about prescriptions, doctors' practices, patients, social conditions, geographical location and morbidity. The year chosen for his study was 1951. Dr. Martin has told us that his subsequent investigations into trends of prescribing during the period up to 1957 have produced no new evidence to lead him to alter the conclusions drawn from his study of prescribing in 1951.

99. In the first group Dr. Martin included such variables as the average frequency per patient, the average total cost per prescription and the average total cost per patient. His second main group was concerned with the conditions under which doctors practised, in terms of the size of their lists and the organisation of their practices and included such variables as the ratio of assistants to principals and the proportion of doctors practising single-handed. The third group covered population characteristics of each area, for example, the proportion of women in the population, the size of dependent age groups and the number of patients covered by National Health Insurance in 1947 as a proportion of the population. In the fourth group concerned with social conditions, Dr. Martin included, as an index of general prosperity, total retail sales per head and in addition dispensing chemists' sales per head. The fifth group included information designed to allow for the influence of climatic conditions and the last group attempted to estimate the extent of morbidity or ill-health in each area by reference to such factors as infant mortality and other death rates.

100. In his analysis Dr. Martin attached considerable importance to the effect on total costs of frequency of prescribing which, in his view, depended chiefly on three factors—a general regional one associated with climatic conditions, morbidity and local custom. Having regard to prescriptions in 1951 he concluded that,

> "prescription frequency was best described as being part of a response to ill-health, the nature of the response being determined also by local attitudes and expectations as to the appropriate behaviour of doctor and patient when illness occurred. There was every evidence that these attitudes varied considerably from region to region, being conducive in particular to very high frequencies of prescribing in Lancashire, and to low frequencies in the North-East and in the Midlands; in Southern England, blessed with generally low rates of morbidity, the nature of this response was not of such critical importance.
>
> Average cost per prescription is closely related to social conditions; expensive prescriptions occur more frequently in well-to-do areas, cheap ones in poorer areas. Also associated with social class are mean list sizes and morbidity, so we find that cheap prescriptions are more common

in areas where lists are large and the amount of ill-health is considerable. In spite of the relationships between average total cost per prescription and the indices of social class, weight still has to be given to the "custom" of the area and close prediction is impossible without it.

We find that areas with high average total costs per prescription are not concentrated in particular regions, but consist simply of the more prosperous county boroughs in each region. The areas with low average total costs per prescription are relatively more frequent in the Midlands and in the East and West Ridings of Yorkshire. Areas with low average total costs per prescription are often ones with high average frequencies of prescription per patient; they seem to have maintained the traditional opposition of cost to frequency. This, however, is now much less common in the areas with high average total costs per prescription".

101. Dr. Martin considered the problem of reducing differences in frequency between areas and suggested that more intensive research in selected areas might shed light on this variation, much of which is at present unexplained. While differences in cost which are attributable to such factors as climate, geography, occupation and habits of life cannot be readily influenced and have to be accepted, we agree that there may well be other matters contributing to differences in cost from area to area which would repay further study. The differences in cost are considerable: this applies to both prescribing and dispensing doctors. If means can be found of reducing the more glaring examples of high frequency some savings in the drug bill might ensue.

102. Dr. Martin suggested that there might be a significant relationship between frequency of prescribing and the prevalence of single-handed principals where frequency is very high and supports his argument by reference to another Region with a high degree of organisation in partnerships where frequency is very low. As a result of his findings Dr. Martin would like to see an enquiry into the factors responsible for the differences in prescribing behaviour between single-handed practices and partnerships.

(*vi*) *Matters for further statistical study*

103. We share Dr. Martin's view that a prerequisite of further research is an improvement in the quality of the data available. Such improvement should be directed, in our view, towards obtaining statistical information which would enable accurate assessment to be made of the nature and magnitude of the forces which have tended to increase the drug bill. For example, the statistics at present available do not enable the number, character and cost of drugs within the separate categories classified by the Standing Joint Committee on the Classification of Proprietary Preparations to be estimated exactly or the extent to which increased costs are due to the prescribing of increased quantities or to changes in the pattern of prescribing arising from such factors as the introduction of new drugs. In this latter connection it would be useful to have precise information as to the extent to which the use of the newer drugs has ousted the older ones in common use. Nor do the statistics allow for the analytical examination of the geographical variations in prescribing.

104. We feel strongly that the Ministry should make suitable arrangements for the future for obtaining adequate statistical information about prescribing

and for the analytical study of this information when available; and that they should consider the desirability of arranging special inquiries in selected areas of the kind suggested by Dr. Martin.

105. We are informed that the number of single-handed practitioners providing unrestricted medical services decreased from 7,459 on 1st July 1952 to 6,381 on 1st July 1957 and that the number in partnership increased during this period from 9,745 to 12,962. In view of this growth in partnership under the Health Service and of Dr. Martin's conclusion that the single-handed principal tends to have a high frequency of prescribing, a special study of the relative prescribing habits of single-handed doctors and those in partnership or group practice in particular regions would be of particular interest.

106. Another aspect of the drug bill which might repay special study concerns the prescribing of drugs such as the antibiotics and corticosteroids. The total cost of twelve months' prescriptions for chloramphenicol, for example, is estimated at £1·75 millions and for cortisone and hydrocortisone £2·4 millions. A careful scrutiny of prescriptions issued during a given period in selected areas, in consultation with the doctors and the Local Medical Committee (and possibly the patients) concerned, might help to reveal any excessive prescribing of these very expensive substances. Similar studies, if put in train immediately after the introduction of other important drugs in the future, may provide useful information besides deterring unnecessary prescribing.

107. A further interesting field of study lies in the relative roles of proprietary and standard preparations in prescribing under the National Health Service. Although, as we have said elsewhere (paragraph 211), the numbers of equivalent alternatives for proprietary preparations are less than is sometimes thought, the fact remains that the use of cheaper alternatives, whether in standard or in proprietary form, can effect savings. Our attention has been drawn to the example of dexedrine where an estimated saving of over £200,000 might have been secured in one year if prescribers had ordered dexamphetamine sulphate instead. More recently, it has been estimated that a saving of about £38,000 might have been achieved (in Scotland) in one year in the treatment of iron deficiency anaemia if general practitioners had prescribed ferrous sulphate instead of the many proprietary compounds of ferrous gluconate and ferrous succinate which inquiry showed to be no more effective than ferrous sulphate.*

Experience in other countries

108. The Committee thought that its investigation would not be complete without comparing the increase in the drug bill in England and Wales with that in other countries where medicines and drugs are supplied to the public in conditions analogous but not identical with those of the National Health Service.

Experience in Western Europe and in Australia and New Zealand shows that the problem of prescribing costs is not peculiar to this country and indeed most countries with systems of social security have expressed concern at the continuing increase in these costs.

109. The difficulties in the way of making valid comparisons between experi-

*Lancet, 13th September, 1958.

ence in different countries are formidable. Methods of presenting statistical information about the costs of pharmaceutical services differ: moreover, since 1949 there have been widespread price increases, varying from one country to another. There are great differences in the benefits available and the proportions of population covered and some countries have changed the scope of benefits provided within their schemes. These factors rule out any but the broadest comparisons.

110. Nevertheless our examination of the general situation in other countries has led us to think that undue anxiety may have been expressed about the rise in the cost of prescribing from 1949 to 1957, and too little attention directed to the heavy cost which must always be expected under a system such as the existing one.

111. In France the total pharmaceutical benefits paid in millions of francs increased from 13,190 in 1949 to 71,805 in 1957. We understand that, while the number of contributors to the general scheme has hardly altered, the number of persons entitled to benefits has risen because of changes in the population structure and that the increase has related largely to children and old people who are heavy consumers of drugs.

112. In the Netherlands the total cost of pharmaceutical services in thousands of florins rose from 34,353·6 in 1949 to 60,555·0 in 1955. In the Netherlands doctors may not prescribe medicines which are in the experimental stage, or for which there is a less costly substitute of equal therapeutic value, nor may they prescribe proprietaries for which there are standard substitutes of equal therapeutic value. These factors may have prevented a more serious increase in costs.

113. In New Zealand the rise which has taken place both in the cost of prescriptions and in the number of prescriptions per head of population has been very marked. The total rise in cost over the past 11 years is reported to have been 210% while the number of prescriptions per head of population has risen by 60%.

114. In Australia the provision of drugs under the general pharmaceutical benefits scheme has been changed during the period under review. In 1948 the range of medicines provided free was in accordance with the Commonwealth Pharmaceutical Formulary. In 1950 a new system was introduced to provide the more expensive life-saving drugs, a list of which was compiled by an advisory committee of medical experts. Early in 1952 the Commonwealth was empowered to provide pensioners and their dependents free of charge with medicines contained in the British Pharmacopoeia, with a few exceptions, together with some other specified drugs.

So far as the five years 1952/53 to 1956/57 are concerned Australia shows an increase in the total bill for general pharmaceutical benefits from £6·2 mils. to £8·5 mils. The scheme for pensioner pharmaceutical benefits shows a much sharper rise in total cost from £729,000 in 1952/53 to £1,793,000 in 1956/57.

Australian experience seems to show that where free prescribing on the basis of the British Pharmacopoeia has been permitted the increase in number of prescriptions and cost per person has been very substantial. Only in the general pharmaceutical section where the list of free drugs was restricted has the increase in costs been moderate.

115. It is difficult to draw any reliable conclusions from these facts, but they suggest to us that it is the absolute cost of the scheme rather than the fact that the cost had risen which should be the real cause for anxiety and the principal subject of our attention and recommendations.

The fact is that we have embarked on a service which is bound to be expensive. Recent developments in new drugs and the introduction of new techniques of treatment may make prescribing even more costly as time goes on. The aim should surely be to keep it as economical as possible, compatible with the best available modern treatment, to ensure good value for money and to check waste.

Compensating Benefits From Present Expenditure on Drugs

116. It must not be overlooked that the community as a whole derives tremendous benefits from the growing use of the pharmaceutical service, not only in terms of relief of suffering and saving of life but also financially.

In an age when the cost of institutional medical treatment has undergone a very inflationary rise it should be a matter of thankfulness when some new development renders such treatment out of date or unnecessary.

The hospital service would probably be costing a great deal more but for the use which general practitioners are now able to make of new drugs. Patients are now often treated at home for conditions which were formerly treated in hospital.

117. The value of the new drugs is illustrated most strikingly in the treatment of tuberculosis. Although mortality and morbidity in the case of the tuberculous have been slowly decreasing in England and Wales over a long period partly as a result of improved social and environmental conditions, it is only recently, since the use of chemotherapy, that there has been any dramatic improvement. During the period 1948-1957 tuberculosis mortality has been reduced from 21,993 to 4,784 per annum. Notifications have fallen from 52,576 to 32,669 and, while the numbers of hospital beds occupied by tuberculosis cases have fallen only from 26,115 to 20,085, the waiting list fell from 10,986 to 632 (1956). The average length of stay for tuberculous patients has decreased from 173 days in 1952 to 132 days in 1957.

In 1948 Regional Hospital Boards were trying desperately to increase their accommodation for the tuberculous. To-day beds in many sanatoria are used for other purposes.

118. The position in infectious diseases hospitals has also been completely transformed since new drugs such as the sulphonamides and certain antibiotics came into use. Between 1953 and 1957, the average daily bed occupation has fallen from 5,362 to 4,291, that is by 20% in a period of only four years; and the average stay from 21·1 days to 19·7, or about 7%. Since 1953 there has been no waiting list for beds in these hospitals, many of which have been made available for other hospital service.

Before the war pneumonia often involved expensive hospital treatment especially if there were complications. Patients then had to spend several weeks in hospital followed by protracted convalescence. To-day with the new drugs available, one or two weeks treatment, almost invariably at home, is all that is normally required. Similarly, acute mastoid infections, which pre-

viously often involved surgery, can now be prevented by treatment at home with antibiotics and sulpha drugs.

In mental practice too the use of tranquillising drugs has wrought a substantial change. As well as reducing the strain on nursing staff, in many cases they make possible a shortening of the patient's stay in hospital.

119. If these trends can be encouraged to the point at which hospital beds can be closed then the saving will be obvious.

All these changes, which not merely improve health and bring relief to suffering, call for full recognition by this Committee since they effect substantial financial economies.

120. That there has been no reduction in the hospital drug bill is probably due in large measure to the fact that the new drugs have enabled physicians and surgeons to extend their work into new fields. For example, the new anaesthetics and antibiotics make possible surgical procedures which were impossible without them.

121. We were concerned to note the totally inadequate publicity given to the remarkable saving in life, improvement in health, increase in efficiency and saving on expensive institutional treatment which all stem from, among other things, the use of new drugs. We urge the Minister of Health to consider ways and means of publicising these facts in a telling manner.

122. Unless the public are to be deprived of the advantages of progress in medical science brought about by the development of new drugs the total cost of the drug bill is bound to rise.

Nevertheless it is essential in the public interest to do everything possible to ensure that uneconomical prescribing is discouraged and waste checked. With this objective before us, therefore, we direct our attention to considering what contribution can be made by doctors, manufacturers, pharmacists and even the patients themselves to bring this about. We also consider whether more can be done to improve the training of medical students and young doctors or to assist practitioners already established in practice to assess the claims made for a bewildering variety of new products.

PART III
THE GENERAL PRACTITIONER

CHAPTER 5
TRAINING AND EDUCATION IN PRESCRIBING

The Medical Student

123. To help us to form an opinion about the adequacy of the instruction and training given to the medical student in prescribing, we circulated a questionnaire to Deans of medical schools in which we sought information about the practice in their respective schools with regard to the teaching of therapeutics.

124. The replies we received revealed considerable variation between medical schools in the amount and scope of training and examination in prescribing. Some medical schools have a Professor of Therapeutics, some a reader or lecturer with special responsibilities while in many the teaching is done mainly by part-time clinicians. The teaching of the medical student is normally confined to general principles, experience in the practical application of his knowledge being frequently left to be acquired during his house appointments.

125. In a few instances only is there any systematic attempt to instruct students about the cost of drugs whether in general or any other field of medical practice. The number of lectures devoted to therapeutics varies greatly. In most schools they are given in the students' third and subsequent years. Instruction in the writing of actual prescriptions is normally given at an early stage of their clinical years by a pharmacist or, less frequently, a pharmacologist. While most schools give some instruction in the use of the British National Formulary not all students possess copies or are familiar with the contents.

126. Therapeutics plays an important part in the final examination of all universities. In some schools there is a paper in therapeutics, applied pharmacology and toxicology in which prescriptions are often required. In other schools one or more questions are devoted to the subject in the papers on General Medicine.

The following replies from two medical schools are of particular interest:

(i) "We believe that the duty of the teaching school and hospital is to teach students the principles of sound therapeutics and prescribing and to teach newly-qualified doctors to put them into practice in their pre-registration year. We believe that good prescribing is generally economical and that teaching about cost ought to take second place but we do point out that certain drugs are costly and we also recommend that the National Formulary should be used unless there

are strong reasons to the contrary. Accordingly we emphasise to students:

(a) that no drug should be used unless its specific action is indicated;

(b) that the effect of each drug should be critically evaluated in relation to every patient: there is no such thing as "routine" therapy;

(c) that simple rather than multiple remedies should always be used except where there are clear indications to the contrary.

These principles are taught in an obligatory therapeutics course and again by discussion on cases in the wards and out-patients. There is a regular therapeutics seminar once weekly. The same principles are emphasised to newly-qualified doctors in the pre-registration year. A leaflet is in preparation to be circulated to senior students and newly-qualified doctors emphasising these principles and giving a list of the more expensive drugs. We do not think that there would be any value in students attempting to memorise the costs of large numbers of drugs; it would be meaningless and would quickly become obsolete."

(ii) "The medical students are instructed in prescribing by lectures in the course of Applied Pharmacology and by the Pharmacist. The instruction includes a description of the scope and authority of the B.P., B.P.C., and B.N.F., an outline of the stages in the development of new drugs, a differentiation between "formulated" products sold under proprietary names and the more genuine advances in Pharmacology and Therapeutics. Examples of the comparative prices of B.N.F. and equivalent proprietary medicines are quoted.

The difficulties regarding the assessment of the flood of new therapeutic products are emphasised by reference to controlled therapeutic trials being conducted in the Hospital."

127. Most schools operate schemes under which senior students spend short periods with general practitioners to enable them to gain some insight into the conditions of general practice. In nine of the twenty-one schools consulted seventy per cent. or more of final year students take part in such schemes. In nine of the remainder less than fifteen per cent. take part. At one school it is compulsory for all final year students to spend three weeks with a general practitioner. In only one instance is no scheme in operation.

Instruction of medical students in costs of drugs

128. We have had a great deal of evidence on the subject of the instruction of medical students in the relative costs of drugs. While there is general agreement that greater attention should be given in training to the problem of effective prescribing, few witnesses have supported the inclusion of instruction about costs in the medical curriculum.

129. The main arguments advanced against may be summarised as follows:

(i) It is not part of the duty of a university to teach economy as such. The cultivation of the critical mind and of ordered habit of thought are more important than imparting factual knowledge about costs. The major problem confronting the doctor in deciding whether to

prescribe a newly-introduced drug is in knowing whether it is of real value or whether its popularity is simply the result of intensive advertising. The solution lies not so much in getting students to think in terms of the cost of individual drugs as in providing them with adequate instruction in methods of evaluating the therapeutic value of drugs.

(ii) The medical curriculum is already overcrowded and students have more than enough to do in learning the medical and scientific backgrounds of their subject.

(iii) New drugs are constantly being introduced and information about costs is soon out-of-date.

130. A number of schools have taken steps, however, to interest students in the principles of economical prescribing. Some of these are outlined in paragraph 126 above. Others include:

(i) Practical instruction to show how economy might be achieved by using one preparation rather than another and how actual waste occurs;

(ii) the circulation to medical staff and final year students of price lists showing the costs of drugs and the quantities used throughout the hospital;

(iii) the inclusion on the case sheet of the cost where expensive drugs have been prescribed;

(iv) regular production by the hospital pharmacist of simple facts about the drug bill in total and in relation to individual items;

(v) special mention in undergraduate classes (as a check against over-ordering) of quantities of drugs and dressings normally required for individual treatment and of the packs available for surgical dressings.

131. One or two witnesses thought that there was too much emphasis in training on the pharmacological action of drugs and that students were not taught enough about how they should be used. They suggested that more attention should be paid to practical therapeutics. While it was not always necessary, in their view, to appoint a special teacher in therapeutics they thought that practising clinicians should play a more active part in this aspect of the student's education.

Several witnesses suggested that the time to impart detailed knowledge about costs of treatment was during the pre-registration year and that during this period specific training in economical prescribing should be given by experienced general practitioners specially appointed for the purpose.

132. We have been told frequently in evidence and are satisfied that some newly-qualified doctors and medical students are ignorant of the cost of prescribing and of the cost of the Health Service as a whole and we are aware that the Select Committee on Estimates recommended* that students should be required to satisfy their examiners that they had a proper knowledge of the financial structure of the Health Service and of the cost of treatment for which they might be responsible.

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*Sixth Report (Session 1956-57) Paragraph 31.

133. Although we understand the concern of the Select Committee we hardly feel that a cursory knowledge of the cost of the Health Service would have sufficient influence on the prescribing habits of doctors and we doubt if it would be expedient or wise to make statutory provision for a compulsory examination in economics of prescribing as part of the medical curriculum, for the following reasons:

(a) The body responsible for the general supervision of medical education and examination is the General Medical Council and we have neither the wish nor the right to trespass in their field. In the recent revision of their "Recommendations" the General Medical Council emphasised the importance of proper training in pharmacology in the following terms:

> "instruction should be given on the mode of action of drugs, their distribution and fate in the body, their possible toxic effects and their therapeutic uses and students should be acquainted with the principles governing the design and interpretation of clinical trials."

The main object in the teaching of pharmacology to future clinicians is to give them an academic background for the drugs they are going to use in the future and a critical and enquiring mind so that they can properly evaluate the sales talk of the representatives of the drug houses and the flood of advertising literature on the breakfast table, some of which reaches them as final year students.

We believe that the present requirements are sufficient and that no further responsibilities should be imposed on Universities and licensing bodies who naturally wish to retain as much academic freedom as possible in shaping their individual curricula.

(b) Although no specific recommendations have been made by the General Medical Council in respect of teaching or examination in economics of prescribing we found, on enquiry, that many schools had already devised ingenious methods to interest medical students in the subject; that in most of them considerable attention was already devoted to it and that interest in the matter was growing. We were particularly impressed, for instance, by a list of useful drugs and their prices issued by Professor Melville Arnott to his students at Birmingham and by the following question on the evaluation of a proprietary preparation recently set in the final examination at Sheffield:

" The following advertisement has been sent recently to the medical profession:

> "The 'Tablet' offers its help with ever-increasing confidence. The small, sedating but not stupefying doses of phenobarbitone balance out the pin-pricks of everyday existence enabling the subject to come to terms not only with himself but with his surroundings; and this effect is fortified by the metabolic stimulation of the cerebrum characteristic of the prime components of the Vitamin B-complex.
>
> Each tablet contains:
>
> Phenobarbitone B.P. 0·25 gr.

Aneurine Hydrochloride B.P.	1·5 mg.
Riboflavin B.P.	1·0 mg.
Pyridoxine Hydrochloride B.P.C.	0·17 mg.
Nicotinamide B.P.	5·0 mg.

Dosage: One tablet with water before meals and at bedtime dosage can be two to four tablets occasionally if insomnia is present."

Comment on this advertisement and preparation."

134. We have already outlined in paragraphs 126 and 130 above the steps taken by some universities and medical schools to impress on students the importance of economical prescribing. We would urge the Minister to draw these measures to the attention of all teaching bodies.

There has lately been established an Association for the study of problems of Medical Education and we recommend that the Minister should invite that Association to consider the economic problem and to encourage all medical schools to take an interest in it.

We believe that action of the kind we have suggested is more likely to be fruitful than an arbitrary regulation of the type suggested by the Select Committee.

Practical training with general practitioners

135. A number of witnesses thought that it was imperative for senior students to spend a short time working by the side of experienced general practitioners, regardless of the field of medicine in which they intended to specialise. It was a disadvantage, in their view, that under present arrangements nearly all of the student's experience was confined to hospital. It was necessary to supplement lectures with practical experience. Only by spending some time with a general practitioner could the student acquire knowledge of the diseases with which the practitioner was commonly faced, of how and what he prescribed and how he managed his patients. A fortnight was considered to be a suitable period.

In most medical schools students are already enabled to spend some time with general practitioners during the period of clinical instruction. We regard these periods of secondment as an important part of the training of the medical student and recommend that those schools where only a minority of students participate should be asked to consider extending existing arrangements, if practicable, to enable more senior students to take part.

We further recommend that schools should specifically ask the practitioners concerned to discuss with students the errors of excessive and inappropriate prescribing that have come to their notice.

British National Formulary and Prescribers' Notes

136. We were repeatedly informed that more could be done to encourage students in the use of the National Formulary. Older practitioners often complained that young doctors entering general practice for the first time were familiar with the names of many proprietary preparations but were not know - ledgeable about the standard preparations listed in the National Formulary. These witnesses emphasised the need for all students to be supplied with copies

of the National Formulary. Some thought it desirable that students should receive copies of the Ministry's Prescribers' Notes in addition.

We have already recommended in our interim report that the attention of medical schools should be directed to the importance of the National Formulary and that the Ministry should supply copies of the alternative edition to all clinical students and to general practitioners and hospital doctors. We also recommended in that report that copies of Prescribers' Notes should be circulated to all clinical teachers, consultants, hospital doctors and final year students as well as to general practitioners and that the Notes should be issued more frequently and be expanded in scope.

Post-graduate Education

137. While the traditional methods of keeping abreast of advances in the diagnosis and treatment of disease through reading books and medical journals and attending scientific meetings will no doubt remain the foundation of the general practitioner's continuing education, much is being done in the field of organised post-graduate studies.

The universities and the British Post-graduate Medical Federation provide specially arranged courses for general practitioners wishing to keep themselves informed of developments in medical knowledge. To help practitioners to attend these courses the Minister of Health pays the full course fee, refunds the doctor's expenses and, where necessary, contributes towards the cost of employing a locum tenens. The courses last up to two weeks and may be intensive or spread over a period. The courses are open to assistants as well as to principals in the Health Service. Attendances at these refresher courses have increased in recent years. Between the years 1955 and 1957 the numbers of doctors attending refresher courses in England and Wales increased from 1,545 to 1,763 per annum (out of about 20,000). The numbers of principals who attended increased by 200 and of assistants by 18. Many of the courses are general but specialised courses are held also on such subjects as obstetrics and gynaecology, cardiology and dermatology. While therapeutics may play some part in them we understand that no special emphasis is placed on the practical application of this knowledge to National Health Service conditions.

We understand that the British Medical Association and the College of General Practitioners and some Medical Societies take an active interest in post-graduate medical education. They organise lectures, short courses and symposia on many clinical subjects of interest to family doctors and plan to extend these activities.

In addition, a scheme has operated from the beginning of the Health Service to provide training facilities for young doctors intending to enter general practice. The object of the scheme is to enable trainee general practitioners to acquire, during a period of twelve months, a thorough and systematic grounding in the work of a general practitioner. Selected established general practitioners are approved as trainers and are given a grant for the period of tuition. Since 1953 the number of trainees attached to general practitioners has increased from 289 to 338 (1957).

138. It has been submitted to us in evidence that the best method of preventing waste in prescribing is to ensure that practitioners are thoroughly familiar with the indications and contra-indications for the use of every drug prescribed

and that they should be enabled to judge whether a substitute for any drug would have the same pharmacological action as the original substance so that they can decide whether an alternative drug at a lower price would be acceptable in practice. While education with these aims in view must start in the undergraduate period, there is general agreement that it should continue after graduation because of the large number of new substances offered to the profession every year.

139. Suggestions for promoting efficient prescribing which have been put to us include:

(i) the appointment of senior general practitioners to give instruction to junior hospital medical staff in the practical aspects of prescribing in general practice ;

(ii) an extension of the system of informal advisory visits by Regional Medical Officers; and

(iii) the regular circulation to general practitioners of authoritative and up-to-date information on new pharmacological and therapeutic knowledge.

Each of these suggestions in our view merits the closest examination.

140. We are satisfied that there is a clamant need for systematic post-graduate instruction of general practitioners in pharmacology and therapeutics. Innumerable new drugs are produced and the average doctor is unable to judge the validity of the claims made on their behalf by the manufacturers' representatives.

141. We are pleased to note the increasing provision which has been made in recent years for general practitioners to attend refresher courses. While recognising that there are factors, such as the difficulty of finding a locum, which tend to discourage attendance, we would commend these facilities to the attention of all general practitioners. We have considered but reject a contention that more doctors would attend if they were paid a fee. A course of this kind, if properly organised, should be its own attraction. Financial help is already given under the official scheme and no further inducement to attend should be necessary.

The main recommendation we would like to make with regard to these courses is that the responsible post-graduate Deans and Directors should be asked, where appropriate, to consider including in the syllabus instruction about advances in practical therapeutics and the merits and demerits of new drugs and some indication of costs.

142. The official trainee-assistant scheme seems to us to offer an excellent opportunity for training the young doctor in the principles of economical prescribing and we recommend that trainer principals should be asked to emphasise to trainees the importance of prescribing with economy.

143. We would like to see a continuing and growing use made of the official arrangements for refresher courses for general practitioners and of those for the placing of trainees with experienced principals. Every encouragement should be given in addition to the excellent work which is being done by, for example, the British Medical Association and the College of General Practitioners in organising post-graduate seminars and lectures. It would be useful for Regional Medical Officers to attend such seminars.

144. The Committee have noted that no detailed education on the problems of prescribing in general practice is given to new entrants. It is felt that while training on general principles is essential for students, only the doctor who has actual practical problems of general practice will be in a frame of mind to obtain the most benefit from a course.

The Committee therefore recommend that all entrants to general practice (including trainee general practitioners) should be urged to attend within one year of entering a course of one or two weeks' duration which will deal, among other things, with medical administration in general practice, with special emphasis on the problems of prescribing. Such a course might be provided by universities and medical schools on behalf of the Ministry of Health under the same conditions which apply to general practitioners attending refresher courses.

Regional Medical Officers

145. Regional Medical Officers can play a useful part in the post-graduate instruction of general practitioners and in our interim report we urged that greater use should be made of these Regional Officers. The possibility of enlisting the help of University Departments of Pharmacology and Therapeutics in the instruction to be given to general practitioners by Regional Medical Officers should be considered.

146. We are informed by the Department that there are about forty Regional Medical Officers in England, that is about one to every five hundred general practitioners and that on average each Regional Medical Officer visits about twenty practitioners per annum. Although prescribing interviews take up a large part of the Regional Medical Officers' time, their main function, we are told, is in connection with patients referred to them for a second opinion for sickness and industrial injury benefit, etc.

We are convinced that the Regional Medical Officer could do more than at present to help doctors in their prescribing. Under existing arrangements some doctors see the Regional Medical Officer in a negative light, i.e. as an inspector seeking to enforce the regulations about excessive prescribing. In our view, the Regional Medical Officer should be a positive force for good prescribing and good doctoring. He is often the general practitioner's only contact with the Ministry and his function should be to give a lead not only in rational prescribing but in all aspects of good general practice.

In our interim report we recommended an extension of informal visiting by Regional Medical Officers. The further evidence we have taken confirms the views we then expressed. While we recognise that the Regional Medical Officers' present dual function has the advantage of providing for the individuals concerned a varied and interesting career, we are of the opinion that Regional Medical Officers should be enabled to devote more than one day per fortnight to visiting doctors to discuss prescribing.

147. Our interim report included a number of recommendations about the provision of information on prescribing. We return to the question of information in the following chapter.

CHAPTER 6
INFORMATION FOR THE PRACTITIONER

148. The number of new drugs which are evolved in any one year is comparatively small. But the new formulations of both new and established drugs are so numerous that no work of reference or textbook could be expected to keep pace with them. Indeed, in many cases it would not be appropriate for them to do so. General practitioners must therefore look elsewhere if they wish to keep abreast of the present rapid changes in this field.

149. The sources of objective information which are available to them in this sphere are limited. Much useful material is to be found in the medical and scientific journals, for example, in articles analysing and assessing the results of clinical trials of new drugs. Some of these journals also publish at intervals authoritative notes giving practical and unbiased guidance on new drugs and new formulations of older drugs.

150. Information about the properties and therapeutic value of particular products is also to be found in much of the advertising literature sent to doctors by the drug manufacturers. Their representatives, many of whom are pharmacists, are trained to inform doctors about new developments in therapy and to discuss the costs and relative advantages of different methods of treatment but with the main purpose of selling their firms' products. In addition, some larger manufacturers prepare and distribute, on request, card indices giving information about their own products.

151. From time to time, the Ministry have circulated to doctors lists of the proprietary preparations classified in categories 1, 5 and 6.* Useful information on the therapeutic value of individual drugs is contained also in the British National Formulary and the Ministry's Prescribers' Notes.

152. In our interim report we recommended that copies of the alternative edition of the British National Formulary should be sent to all clinical students, general practitioners and hospital doctors and that Prescribers' Notes should be extended in scope and circulated more widely and more often. We also pointed to the need for a comprehensive prescribing handbook which should contain not only much of the alternative edition of the Formulary but also the comparative costs of standard and proprietary preparations and other information which would help doctors in their prescribing. As explained in paragraph 50 above, the Minister has already acted on these suggestions.

Need for objective information about new drugs

153. The main difficulty facing the practitioner is the dearth of impartial information on new drugs and preparations in convenient and readily accessible form which would enable him to assess personally the validity of the manufacturers' claims. A situation of this sort poses a dilemma for the busy doctor. Should he turn his back on the new drugs until their value has been proved in recognised clinical trials (in which case he might be open to the

*See paragraphs 25-29.

argument, if a preparation's efficacy was subsequently confirmed, that he had unfairly deprived a patient of something which would have benefited him)? Or should he be prepared to observe the effects of them on his own patients?

154. The practitioner must therefore obtain what information he can from the manufacturers' literature. This literature, however, varies considerably in quality and quantity. While some provides useful and detailed information giving a fair assessment of the clinical and pharmacological evidence on the products described, a considerable proportion is sent out in the form of reminders and contains little information. The literature of some manufacturers indeed, makes claims for the products which are not justified by acceptable evidence.

155. Our witnesses agreed that it was wrong that the doctor should be dependent upon the manufacturers' advertisements for information about new drugs. Most felt that to help him in reaching a decision he needed to have easy access to some independent source of information.

156. Varying opinions have been expressed as to who should be responsible for assembling and disseminating this information and the form in which it should be brought to doctors' attention. Some witnesses thought there should be a special information centre to which doctors could apply for information and advice about the effectiveness and cost of new drugs and with power to call for the full pharmacology and results of clinical trials. Such a body would work in association with but independently of the Ministry of Health. The information which it assembled should be published regularly through the existing Prescribers' Notes or through a new and authoritative publication which should appear at frequent intervals.

157. One suggestion put to us was that the Minister should appoint a Therapeutic Products Council whose functions would include the co-ordination of research and the publication of information about new drugs.

158. Other witnesses thought that doctors should be provided with a card index of drugs providing concise information, which could be kept up-to-date, about prices, clinical uses, dosages, pack-sizes etc. A service of this sort might be administered and financed by an independent body or by the pharmaceutical industry itself. Mention should be made of the information service provided through the Pharmaceutical Journal under the aegis of the Pharmaceutical Society of Great Britain on new products used in medicine. It takes the form of a card index of new products which have been marketed since 1948 and provides such details as composition, properties, clinical indications, contra-indications, dosages, references to the literature, packing and price. The information is however designed primarily for pharmacists and does not provide a critical assessment of the therapeutic value of the products described.

159. The evidence we have suggests that general practitioners would welcome advice and information to enable them to put the manufacturers' claims in perspective. So great is the volume of advertising material despatched from the manufacturers that much of it goes unread. The amount of time available to practising doctors for reading is limited. Whatever information is necessary to enable them to prescribe efficiently should come to them therefore in a form which can be readily assimilated.

160. We regard the provision of adequate information, together with the improvements in training and education which we have recommended in the

preceding section of our report, as the key to good prescribing. Indeed this appears to us to be the only alternative to some form of restriction for ensuring economy as well as efficiency in prescribing. What the general practitioner needs above all in this context is

(i) a critical and unbiassed statement of the advantages of new drugs compared with existing products; and

(ii) information on the cost of treatment compared with that using existing products whether proprietary or standard.

This latter information is not difficult to obtain and our interim report indicated our views on how it should be provided, e.g. through the medium of a comprehensive prescribing handbook. Whatever form the new handbook takes, it is clear to us that something more is needed to provide the information at (i) above. This information is usually difficult to obtain especially in the early stages of a product's existence.

161. We have given careful thought to the suggestions outlined in paragraphs 156-158 above, namely the establishment of a special independent information centre; the dissemination of information through Prescribers' Notes or another publication; and the production of a card index of new drugs. It is clear that whatever form it takes, the information must be authoritative and must reach prescribers quickly as new products become available. The organisation which undertakes the task of informing practitioners on new products must, therefore, have facilities for obtaining authoritative opinions and for editing, publishing and distributing the results. As the information is intended for general practitioners, it would be advisable if the service were in the hands of those who understand their needs.

162. In our interim report we made various suggestions with regard to the expansion and wider circulation of Prescribers' Notes. Since taking further evidence it has become clear to us that many doctors tend to regard the Notes as not presenting a sufficiently independent point of view. For this and other reasons we have come to the conclusion that Prescribers' Notes, in spite of its undoubted usefulness, is not an adequate or suitable channel for conveying to doctors information of the sort we think they really need.

Nor do we regard a card index, with the extra clerical work it would entail, as a practical source of reference for the busy doctor.

163. We recommend the establishment of an independent publication to distribute up-to-date information to general practitioners and other doctors in the National Health Service. The journal, which would replace Prescribers' Notes and which might be called "Prescribers' Journal", would be run by a small Council including physicians, general practitioners, pharmacists, a pharmacologist and a statistician. The Council might be appointed by the appropriate professional bodies. It would determine matters of policy and its members would be expected to contribute their views on important topics. It would appoint a whole-time editor and would seek advice from outside experts whenever necessary.

The Journal should be independent of the pharmaceutical industry and of the Ministry of Health. It would be a journal run by the medical profession for the profession and should be circulated to all doctors in the Health Service and senior students.

Details about the scope of the journal and mechanics of production could be decided by agreement between the professional bodies concerned but we would suggest that the general aim should be to produce it at regular intervals (monthly or quarterly) and that it should include information about new drugs and preparations, the results of clinical trials, editorial comment and perhaps correspondence. We suggest that the journal should be published and distributed by the Ministry of Health who might also be asked to pay for the editorial organisation.

We accordingly recommend that the Minister should approach the appropriate professional bodies who would be asked to take responsibility for producing such a journal for the medical profession.

CHAPTER 7
INFLUENCE OF HOSPITALS AND CONSULTANTS ON GENERAL PRACTITIONERS' PRESCRIBING

164. The example set by the specialist staff of the hospitals in which students serve their pre-registration year and may subsequently hold other resident posts will considerably influence the prescribing of doctors who become general practitioners because it is during this stage of their training that young doctors begin to prescribe on their own responsibility. It is therefore an educational obligation on every consultant to exercise a proper economy in his own prescribing for hospital patients.

165. Some general practitioners feel that, in general, hospital medical staffs do not attach sufficient importance to economy in prescribing and that, hitherto, the newly-qualified doctor in hospital has been given little or no information on the relative costs of drugs. Nevertheless, some hospitals have in fact taken steps to circulate such information and, in some instances, house officers receive specific instructions about their prescribing. Moreover, it is not uncommon for the costs of drugs frequently prescribed and the comparative costs of alternatives to be circulated to hospital consultants and their juniors. In many hospitals the prescribing of house officers is subject to scrutiny by their chief and, in some, a special committee of the medical staff regularly reviews the trend of prescribing with the object of effecting economies.

We think that these measures could be adopted with advantage in all hospitals and we recommend the Minister to bring them to the notice of the governing bodies of all hospitals in the National Health Service.

166. A general practitioner is not directly responsible for the treatment of his patients while they are under hospital care (save in the exceptional case where the patient is admitted to a hospital of whose staff the practitioner is a member). When a general practitioner wants a consultant opinion on one of his patients he normally refers the patient to a hospital outpatients department with a letter. After the consultant has examined the patient, he or she is sent

back to the practitioner with the consultant's opinion and suggestions for treatment: similar information is given when an inpatient is discharged from hospital care.

167. It has been represented to us that in such cases general practitioners sometimes receive recommendations from a consultant to prescribe treatment which appears to be expensive and that they find themselves in difficulty in carrying out these recommendations without unduly increasing their own prescribing costs. Some witnesses suggested that hospital consultants tended to rely too much on proprietary preparations.

168. The main responsibility of the hospital consultant in referring patients back to their general practitioners is to advise on their continued treatment, if necessary. While most general practitioners feel that if they are to do the best for their patients they cannot fail to follow the main lines of advice given by the consultant, the ultimate responsibility for the continuing care and treatment of his patients undoubtedly rests on the general practitioner and the decision whether to accept the advice of a consultant in a particular case is within the practitioner's discretion. In our view it would be of considerable help to the latter if consultants did not inform patients which drugs had been prescribed for them and if, when answering letters from general practitioners and referring back their patients, they recommended British Pharmacopoeia, British Pharmaceutical Codex or British National Formulary preparations wherever practicable.

169. General practitioners work under a completely different administrat structure from consultants in the hospital service and are subject to a for disciplinary procedure in the matter of excessive prescribing with which latter may not be familiar. Any measure which would improve understandi and co-operation between general practitioners and hospital medical staffs is to be welcomed. This end would be served we think and general practitioners assisted to prescribe economically if consultants and hospital medical staffs generally were made more aware of the arrangements for investigating excessive prescribing in the general medical services and of the fact that a general practitioner may have to submit to an enquiry and is at risk of having sums withheld from his remuneration if his prescribing is deemed to be excessive. We recommend that the Minister should ensure that these facts are brought to the attention of the medical staffs of all hospitals.

CHAPTER 8
PRESSURE FROM PATIENTS

170. We have given consideration to the influence which patients bring to bear on prescribing by general practitioners.

That some patients do exert pressure on their doctors to prescribe particular drugs for them there can be little doubt. Patients unfortunately came to expect medicine in addition to medical advice, whenever they consulted the doctor, as a material quid pro quo for their health stamps. The point was made to us in evidence that this tendenoy may have persisted under the National Health

Service due to the mistaken belief that the cost of the Service was met entirely from the Insurance contribution.

171. While all doctors experience such demands from time to time, we have no means of determining how serious their effect is on the drug bill. The position undoubtedly varies according to different types of patient and from one district to another and, naturally, according to the doctor in charge.

172. From what we have heard we feel sure that senior doctors and well-established partnerships are generally able to resist the pressure better than young doctors lacking in experience and working on their own. Certain patients are more likely to try to influence a young doctor on his own with his way to make, than an experienced practitioner who has known his patients for a long time and has learned how to earn and demand their respect for his professional judgment. A study of the age distribution of doctors visited by Regional Medical Officers in connection with apparent excessive prescribing confirms that there is a greater tendency towards higher costs among practitioners in the younger age groups. The natural desire of a young doctor to build up a practice and his lack of experience in handling patients combine to make him more susceptible than more experienced men who have already established themselves and their practices. Doctors in partnerships have the advantage of being able to call upon senior partners for advice and support. The number of competing doctors practising in the neighbourhood will be fewer and transfer to another list will be more difficult. Consequently, there is less risk of patients transferring to another doctor just round the corner.

If only for these reasons, we think that the increase in partnerships and group practice already evident under the National Health Service (see paragraph 105 above) should receive continued official encouragement.

173. Apart, however, from the difficulties caused by pressure from patients there is another possibility just as undesirable. There is considerable temptation in areas where competition is keen or where a doctor is starting up in practice for him to adopt a policy of extravagant prescribing in order to court popularity and attract patients.

Even if the cases where doctors prescribe extravagantly under pressure or where they do so deliberately to attract patients are not numerous, it is in the interests of the community and only fair to the majority of doctors who endeavour to uphold professional standards that everything possible should be done to discourage such abuses by appropriate sanctions.

Disciplinary measures

174. We have outlined in paragraphs 38-39 above the existing statutory procedure for the investigation of excessive prescribing. This procedure provides that the Minister may refer to the Local Medical Committee for investigation any case in which, prima facie, the costs of a doctor's prescribing are more than was reasonably necessary for proper treatment. We understand that the basis on which cases are considered for such action is agreed with the profession.

175. Under present arrangements the prescribing investigation unit, which compiles factual information on the prescriptions given by doctors whose prescribing costs are above average, prepares such reports in the case of over thirteen hundred doctors each year, of whom over nine hundred are visited by Regional Medical Officers. While accepting that many of these doctors are

enabled to reduce their prescribing costs as a result of discussion with the Regional Medical Officer, we were surprised to learn that the number of cases actually referred to Local Medical Committees by the Ministry in any one year has never exceeded ten and that not more than eight doctors have had money withheld in any one year for excessive prescribing.

176. We are informed that in practice no case has been referred to a Local Medical Committee under the statutory procedure where the doctor's prescribing costs per person on his list have been less than twice the average costs for his area. Our investigations have led us to conclude that the standards which are applied before a case is referred to the Local Medical Committees could be more rigorous. By refraining from asking these Committees to investigate the prescribing of doctors whose costs, while high, fall just short of twice the local average, the Ministry appear, in our view, to have erred on the generous side. We appreciate of course that some account must be taken of varying circumstances in different practices and that special allowance must be made for doctors with small lists. We do not wish to suggest any alteration in the statutory procedure, which enables a doctor to justify his prescribing before the Local Medical Committee and which gives him a further right of appeal to independent referees. While we would not support the rigid application of an arbitrary criterion, there seems to us to be no good reason why the doctor in an average practice with a list of about 2,000 patients should habitually exceed the average of his local colleagues by much more than 50 per cent. before having to explain his reasons. We recommend that the present arrangements should be put onto a more regular basis and that the Ministry should discuss with the profession the possibility of extending the range of its investigations in this field on the lines we have indicated.

177. The mere liability of a doctor to have his costs investigated will not be a sufficient deterrent, however, unless appropriate professional action is taken and penalties imposed wherever serious abuses are disclosed as a result of such investigations. A doctor who sets out to attract patients by extravagant prescribing can secure for himself substantial financial advantage and such a factor should be taken into account when any surcharge or deduction from his remuneration is contemplated. If voluntary discipline rather than enforced restriction is to be an effective check on extravagant prescribing, whether brought about by pressure from patients or opportunism on the part of doctors, then high standards must be maintained and the penalties for such unprofessional conduct should be severe.

178. Various suggestions have been made to us for discouraging importunate patients. Some witnesses thought that an official publicity campaign to educate the public in proper attitudes to health and disease would help. Others thought that pressure from patients would be minimised if the present waiting period for transfer from one doctor to another was lengthened. It was also suggested that patients might be more moderate in their demands if the approximate cost was marked on medicines prescribed under the Health Service, especially the more costly ones.

179. We hope that patients will co-operate by accepting more readily the doctor's advice and guidance as a real contribution to their welfare without the artificial addition of an unscientific placebo. We are not satisfied that the likely effect of a major national publicity campaign to educate the public would justify the considerable expense which would be involved. Nevertheless, the

need for some deterrent is of sufficient importance, in our view, to warrant a limited appeal of this kind in support of the general practitioner. What we have in mind is the provision of posters and notices for display in doctors' surgeries warning patients, in simple language and in their own interests, against getting the medicine habit.

180. The Committee are opposed to the introduction of new regulations to curtail the existing rights of patients to transfer from their chosen doctor. The effects of such a measure might antagonise the public and prove to be more damaging to the National Health Service than the conditions which it aimed to correct.

We are satisfied that the difficulties in the way of marking the approximate cost on medicines dispensed under the National Health Service rule this suggestion out as impracticable.

PART IV

CHAPTER 9
THE DOCTOR'S RIGHT TO PRESCRIBE

181. The National Health Service Act, 1946 provides for the supply of "proper and sufficient drugs and medicines" and it is a doctor's duty by regulations made under the Act to prescribe whatever drugs are required for the proper treatment of his patients. The principle that there should be no absolute restriction on the prescribing by a general practitioner of any drug which in his opinion was necessary for the treatment of his patients was expounded by the Joint Committee on Prescribing. It has been accepted by Parliament and whatever guidance has been issued by the Ministry to help doctors with their prescribing has been in the nature of advice only.

182. A doctor is expected to exercise reasonable care in avoiding waste of public funds and he can be called to account for alleged excessive cost of prescribing. If the case against him is upheld, money may be withheld from his remuneration.

183. Proposals have come before the Committee from various quarters suggesting that one means of reducing the size of the Drug Bill would be to impose some form of limitation on the doctor's present right to prescribe. Before considering these suggestions it may be useful to look at the forms of restriction which have been tried in countries where it has been found necessary to control the supply of medicines under their own schemes of social security, for example Australia, New Zealand and Denmark.

Schemes of Restriction in Other Countries

Australia

184. Drugs which may be prescribed under the Australian Pharmaceutical Benefits Scheme fall into three categories—general pharmaceutical benefits, cortisone and restricted drugs.

The category known as general pharmaceutical benefits includes all important drugs normally used in urgent cases and in the treatment of ordinary acute cases. It includes such drugs as adrenaline, morphine, digitalis, the sulphonamides and penicillin. Drugs in this category are available without cost to the patient on presentation of a doctor's prescription.

The prescribing of cortisone, the second category in the scheme, is limited under the Australian National Health Act to use as a pharmaceutical benefit in four diseases—total adrenalectomy, acute rheumatic carditis, Addison's Disease and status asthmaticus. To prescribe the drug a doctor must complete a special form, declare that it is for the treatment of one of the four diseases

and obtain permission from the Commonwealth Director of Medical Services for its use as a pharmaceutical benefit.

Drugs in the third category are known as "restricted drugs". They consist of antibiotics which may be prescribed for certain diseases only. To prescribe these drugs a doctor certifies that he is using them for a condition permissible under the Act.

185. The Pharmaceutical Benefits Act established a Pharmaceutical Benefits Advisory Committee which decides which drugs shall be placed in the respective categories and how freely they shall be made available. The Committee is composed of eminent doctors and pharmacists. If a doctor disagrees with the views of the Committee he is free to prescribe any drug he wishes but it must be paid for by the patient.

When it is thought that the provisions of the Act are not being complied with or that pharmaceutical benefits are being prescribed wrongly, provision is made for investigation by a committee of doctors or a committee of pharmacists. Persons who consider they have been wrongly dealt with by these committees may have recourse to the ordinary processes of the law and may appeal to the Supreme Court of the State in which they live.

During the five years 1952/53 to 1956/57 the bill for general pharmaceutical benefits in Australia increased from £6·2 millions to £8·5 millions per annum, a rise of some 37%. The number of prescriptions rose from 6·9 millions to 9·0 millions and the average cost per prescription from 17s. 10d. to 18s. 9d.

New Zealand

186. Under the New Zealand system of pharmaceutical benefits, introduced as part of their social security legislation, the patient is normally entitled to be supplied free of cost with any "pharmaceutical requirements" available under the Drug Tariff. Selling prices are determined under pricing rules, which take into account the packs or quantities which most contracting pharmacists might reasonably be expected to buy. If certain expensive proprietary brands are prescribed, however, the social security fund only pays the amount allowed under the pricing rules, the balance being payable by the patient.

The effect of this arrangement is said to result in a measure of price competition between manufacturers wishing to have their brand of preparation available for supply on medical prescription without any extra payment being made by the patient.

187. The New Zealand Drug Tariff includes most of the medicines and drugs described in the British Pharmacopoeia, the British Pharmaceutical Codex, the New Zealand Formulary and the British National Formulary, as well as a number of additional items of recent origin, which have not yet been included in these publications. Certain types of preparation are excluded, for example:

(a) substances ordered for any purpose other than the treatment of a patient's medical condition, e.g. cosmetic and toilet preparations, insecticides, contraceptive preparations, etc.;

(b) sera, vaccines and anti-toxins, unless specified in the New Zealand Formulary;

(c) anaesthetics;
(d) foods and spirits, except when prescribed as ingredients to be dispensed in combination with "pharmaceutical requirements".

During the eleven years up to 1957/58 the total cost of pharmaceutical benefits increased in New Zealand from £1·44 millions to £4·47 millions. The numbers of prescriptions rose from 6·1 millions to 12·2 millions, the cost per prescription from 4s. 8½d. to 7s. 3¾d. and the cost per head of population from 16s. 3d. to 40s. 0d.

Denmark

188. In Denmark there are three lists of prescribable drugs for which in every instance the patient pays one quarter of the cost, the balance being found by the Health Insurance Societies or by the State.

The first list is of fourteen groups of "life saving" drugs (comparable to some extent with the Australian list) which can only be prescribed in relation to specified diseases, e.g. insulin for diabetes, and for which the State pays three-quarters of the cost by reimbursing the Health Insurance Societies.

The second is a list of 750-800 "very important medicines" for which the Health Insurance Societies themselves will pay three-quarters of the cost. This list contains a large number of proprietary preparations and reflects the current medical practice in many European countries of using such preparations very extensively in medical treatment. The proprietary preparations included in this list all appear to have a definite therapeutic value and are such as might be expected in this country to be classified in Cohen categories 1, 2, 3 and 4 (see paragraphs 25-29 above).

The third is a list of other kinds of medicines which are not specified by name or composition but are designated simply as "hypnotics, sedatives, antipyretics, analgesics, antitussives, antacids and medicines for the local treatment of diseases of the skin and mucous membranes". The Health Insurance Societies are only allowed to pay three-quarters of the cost of these drugs if they are being prescribed in cases of "serious and lingering diseases".

We have little information about the financial effects of these restrictions. There is evidence however that the present cost of prescribing under the Danish scheme is at least 22s. per head of the population.

Possible Forms of Limitation which might be applied in this Country

189. To be of practical value any scheme for limiting the range of drugs which may be prescribed and supplied under the National Health Service must satisfy the following conditions:

(i) it should involve no loss of efficacy of treatment of patients;
(ii) no administrative complexity should be involved, e.g. doctors and pharmacists should not be expected to cope with an unreasonable burden of extra paper work; and
(iii) substantial savings should accrue to the Exchequer.

190. Existing schemes for the provision of drugs in Australia, Denmark, and

New Zealand do not meet all three conditions. Although the limitation in the range of drugs imposed in Denmark and New Zealand largely achieves the result at (i) of the preceding paragraph, in both countries the schemes appear to be administratively complex, involving either a considerable burden of paper work on doctors and pharmacists or a frequent need to issue supplementary orders and regulations in order to add new and acceptable drugs to existing schedules etc.

In Australia the lists of permitted drugs appear to be so limited as to provide an incomplete pharmacopoeia for the full range of clinical treatment. Again, the respective costs in all three countries do not compare favourably with the cost of the comprehensive service provided in this country. For these reasons none of the schemes appears to be suitable for adoption in England and Wales.

Restriction according to categories of the Joint Committee on Prescribing

191. In the course of our proceedings one of the more eminent of our medical witnesses stated that in his opinion the nation's health would not suffer if drugs in categories 5 and 6 (see paragraphs 25-29 above) were banned under the National Health Service and if standard preparations, accepted as therapeutic equivalents, were prescribed in place of category 2, 3 and 4 drugs. (If preparations in categories 5 and 6 were banned under the National Health Service the saving to the Exchequer would, it is estimated, amount to about £1 million. But if preparations in categories 2, 3 and 4 were prescribed instead there might be no saving at all). In the light of these statements, the Committee attempted to devise a workable scheme which would provide, for example, that all standard preparations were freely prescribable under the National Health Service (including those available only in proprietary form); that any proprietary preparation in categories 2 to 6 was prescribable, subject to payment by the patient of the retail price; and that any proprietary preparation classified in category 1 as life-saving or otherwise essential should be freely prescribable.

192. A possible scheme on these lines which might satisfy all three conditions mentioned in paragraph 189 above would be one recognising the British National Formulary as the official basis for prescribing, supplemented by preparations classified in category 1. Such a scheme might be regarded as providing a complete range of drugs necessary for a doctor to give his patients effective clinical treatment.

The scheme might involve some amendment of the British National Formulary before it could be accepted for the purpose intended since, as indicated in the preface to the present edition, a preparation or formula is sometimes retained in the Formulary mainly because it is widely or frequently prescribed even though its usefulness compared with newer preparations is open to dispute; and since some similar preparations have been omitted in order to limit the size of the Formulary.

Many Formulary preparations are available only in proprietary form. Such proprietary preparations have been placed in category 2. As the prescribing of these preparations would have to be allowed under our mooted scheme so presumably would the prescribing of the remaining preparations in this category (i.e. those for which there is a standard equivalent preparation) since

it would be inequitable to distinguish between one proprietary preparation and another if both complied with the Formulary.

Preparations in category 3 include new remedies of proved value available only in proprietary form which, but for their presentation in "elegant" form or vehicle, would have been placed in category 1. The prescribing of these preparations would presumably have to be allowed also.

The scheme would require patients to pay for any drug which the doctor was not allowed to prescribe under the National Health Service.

193. Such a scheme would be subject, however, to a number of important objections. In the first place, the exclusion of all preparations in category 4 and those in category 3 which did not qualify for inclusion might put British drug manufacturers at a disadvantage in the export field. Secondly, while administratively it is desirable that hospital and general practice prescribing should be subject broadly to the same considerations, it might be difficult to impose a limited range of drugs on hospitals where clinical trials of new preparations are often undertaken. Thirdly, any scheme producing a substantial saving on the net ingredient cost of drugs might lead retail pharmacists to regard the present on-cost and dispensing fees as insufficient to cover current overheads and professional costs.

194. On the basis of a sample of 76,436 prescriptions dispensed during March/June 1957, the total gross ingredient cost of all prescriptions for 1957 was estimated at about £47 millions of which about £27·5 millions was represented by proprietary preparations not in categories 1 or 2. While no estimate can reasonably be made of the cost of the preparations which might have been prescribed in place of those proprietary preparations, a saving of, say, 10% would amount to £2¾ millions. It is most doubtful whether a saving of this order would be achieved in practice, however, bearing in mind the likelihood that the prescribing of alternatives might in many cases involve very expensive category 1 preparations.

Restriction according to therapeutic use

195. A second scheme suggested to the Committee would divide drugs and dressings into three categories, viz.—those required for patients suffering from certain conditions; those required for other illnesses; and those which might be regarded as household remedies.

Drugs and dressings in the first category would be supplied free of charge (and not subject to a prescription charge) to patients suffering from:

(a) a serious acute illness, such as pneumonia;

(b) a serious chronic infectious illness, such as tuberculosis;

(c) a chronic disabling illness which prevents the patient working (such as disseminated sclerosis or any form of cancer);

(d) an incurable illness which needs the regular administration of a special remedy (e.g. insulin for diabetes mellitus, cyanocobalamin for pernicious anaemia or subacute combined degeneration of the spinal cord).

A working list of diseases requiring such vital drugs and dressings would be drawn up by an expert committee who would revise the list from time to time.

Drugs and dressings in the second category were those required for illnesses outside the list. They would be provided through the National Health Service subject to payment of a prescription charge. Such a charge would not be levied when hardship was involved, e.g. for those with a taxable income of less than, say, £250 per annum, and persons qualifying for exemption from payment would be given a National Health medical card of a different colour which they could present to the dispensing chemist or to the dispensing doctor when obtaining their drugs.

Patients who needed drugs in the third category, household remedies, should pay for them in full.

196. This second scheme is not free from objection. Having regard to the first category there might well be considerable difficulty in practice in attempting to frame a comprehensive and generally acceptable list of chronic diseases. While the Australian scheme is based on a list of drugs it is only for a few new and expensive drugs that the supply is limited to those cases in which it is needed for treatment of particular conditions. This arrangement might get over the difficulty of specifying diseases but might tempt the doctor to prescribe the more expensive "free" drug when something equally suitable could be prescribed at the patient's cost.

The method of payment to be applied to the second category represents in effect the present position under the National Health Service except that a new income qualification for exemption from charge is suggested in place of the present refund based on National Assistance Board standards. It would involve a complicated system of supplying income certificates to Executive Councils so that they could issue the special medical cards and withdraw them if the holder ceased to be qualified. It would place a new and unwelcome burden on the pharmacist who would have to examine the card and check that it related to the patient for whom the drugs were ordered.

Having regard to the third suggested category, doctors under the National Health Service have no duty to prescribe except for treatment and have been asked not to prescribe preparations of unproved value.

Objections to Limitation of the Doctor's Right to Prescribe

197. Schemes of restriction generally found little support among those submitting evidence to us. Indeed, quite apart from the specific difficulties involved in the two schemes described above, in particular the impracticability of enforcing a restricted list, our medical witnesses advanced a number of other important objections both of principle and of practice against limitation. These objections may be summarised as follows.

198. The clinical and academic freedom of the general practitioner must be maintained. The loss of self-respect consequent on any departure from the principle, which has been accepted as fundamental to the National Health Service in this country, that a doctor can prescribe any drug which he considers necessary for his patients*, would lower the status of the profession and ulti-

*It was pointed out to us that there was in practice already a form of restriction in the prescribing of appliances in the general practitioner service. General practitioners can prescribe on E.C.10 only those appliances included in the limited list set out in the regulations. A practitioner who considers that a patient needed an appliance not on the list would have to arrange for him to be examined at hospital in order to obtain the appliance.

mately have an adverse effect on the whole medical service provided for the patient. The doctor must be the sole judge of his patient's requirements for treatment.

The medical profession as a whole would oppose any suggestion of direction from above by a committee with the power to decide which drugs were to be freely available and for which diseases.

A permitted list of free drugs would give rise to the idea that there were two standards of medical practice and two kinds of medicine, in other words a second-class service for those who could not pay. There should be no financial barrier between the patient and his doctor.

Restriction might influence doctors in the choice of drugs which they prescribed. There might well be a temptation to prescribe life-saving drugs unnecessarily and with some possible risk.

199. There is the further point that in other countries schemes of restriction have generally been introduced as a concession to a population which had previously paid for all its drugs. In this country any suggestion of a limited list would represent a curtailment of privileges previously granted.

200. It is clear to us that the preponderance of medical opinion is opposed to any restriction of the doctor's right to decide what is to be prescribed. It is equally clear to us that we should not recommend without very good reason any action which would prejudice the smooth running of the National Health Service, for which the goodwill and co-operation of the doctors is essential. Having carefully weighed in the balance the probable financial returns from the introduction of a limited list against the weighty objections to such a course, we are unanimous in thinking that to place an absolute ban on the prescribing of certain categories of drugs would be the wrong way to attempt to control the drug bill. We prefer rather to rely upon the training of doctors to prescribe with care and discrimination coupled with their liability to justify themselves at an investigation by their colleagues whenever their prescribing costs are substantially above the average. We have already recommended (paragraphs 176 and 177) some tightening of the standards to be applied in such cases.

201. We have received a memorandum emphasising the cheapness as well as the effectiveness of homoeopathic medicines. It is quite outside our terms of reference to express an opinion on the relative merits of this or that form of medical treatment. As stated above, we are opposed to any restriction on a doctor's right to prescribe what medicine he considers best for his patients. If therefore a doctor decides to use homoeopathic remedies he should be free to do so; but he should do it because he considers them most likely to cure, and the lower cost of such prescribing should only be incidental.

202. The foregoing observations refer to restriction by categories of drugs and not to the control of quantities. To this latter aspect of the problem we give separate consideration in paragraphs 294-301 below.

PART V
THE DRUG INDUSTRY

CHAPTER 10
THE INDUSTRY AND THE NATIONAL HEALTH SERVICE

203. The conditions of trading enjoyed by the pharmaceutical industry for such of its products as are prescribed under the National Health Service are certainly out of the ordinary.

204. The doctors responsible for issuing prescriptions are free agents, who are entitled to prescribe whatever drugs they think appropriate for their patients. It is true that they are exhorted to avoid prescribing the more expensive drugs when cheaper equivalents are available, and it is also true that the general practitioner is liable to be called before his Local Medical Committee if his prescribing costs are considerably higher than the average for the district. Nevertheless, there is no absolute restriction on a doctor's freedom to prescribe, and whatever drug, and whatever quantity of it is prescribed, is paid for by the State.

205. It will be appreciated that in order to develop a successful trade under such conditions the emphasis is likely to be placed on persuasive salesmanship rather than on competitive price. The right of pharmaceutical manufacturers to advertise to general practitioners is not disputed. Publicity is a particularly important part of salesmanship in this industry, and is essential for the development of the export trade. In this connection we are given to understand that the value of annual exports of pharmaceutical products has increased from £6·4 millions in 1945 to £37·8 millions in 1958. This is a notable achievement. A sound home market such as that which is provided by the N.H.S. is a useful background on which to found an export trade; and in the public interest it would be folly to impose conditions which could restrict the sort of developments upon which a continued expansion of the export trade must depend.

206. Many new products which have a wide application, such as the newer antibiotics, were originated and patented by foreign firms. The N.H.S. provides a large market, eager to make use of all advances in pharmacy; a market, moreover, in which goods have in effect been bought on the State's behalf for near-free issue without the general application of a system of tendering or costing and which must, in the eyes of the ordinary trader, seem a somewhat "soft" and desirable one to enter. It is, therefore, not surprising that foreign pharmaceutical manufacturers have been setting up branch factories in Great Britain on an ever-increasing scale, and that a great deal of the money spent on N.H.S. prescriptions goes to foreign owners of these firms. Naturally, anyone in need of a cure is only too glad to have the benefit of something good

which has been discovered through research anywhere in the world, so in this sense the more factories foreign firms set up here the better. If, at the same time, the establishment of such firms helps to create employment here, and produces export business, well, that is good too.

Expensive Sales Promotion

207. The evidence of medical representatives before the Committee indicated that the sales propaganda of some of the drug firms is carried to extravagant lengths. The unsatisfactory feature of such elaborate advertisement is that the cost must be provided in the price of the medicines advertised and therefore increases the prescription bill. If price competition operated as the main determining factor in the selection of medicines for prescription, firms would have less incentive to indulge in excessive propaganda, and would watch the expense in their own interest. In our interim report we commented on the fact that in the expensive literature which is showered upon doctors prices were sometimes not mentioned and recommended that, if necessary, the law should be amended to make it obligatory for manufacturers to indicate in literature circulated to doctors in the N.H.S. the price of the advertised products. We are glad to hear that increasing numbers of drug manufacturers are co-operating by giving prices in their literature and that the Association of British Pharmaceutical Industry has encouraged them to do so.

208. Everything possible should be done to prevent public money being wasted in inflated and expensive publicity campaigns. While curiosity and habit may account to some extent for doctors taking heed of propaganda which they dislike in principle, it seems that the most powerful motive is the need to obtain information about new developments in the very limited time available to them. As we have said elsewhere in this report neither the medical journals nor the standard books of reference adequately satisfy this need. The Committee believe that if practitioners were supplied with information about new drugs, as suggested in paragraph 163 and if this was done quickly as new drugs and preparations become available, doctors would be less likely to be susceptible to propaganda. The drugs which are subjected to this intensive sales propaganda are what are generally known as proprietary preparations or medical specialities.

We recommend that the pharmaceutical industry should be asked to consider, in consultation with the appropriate professional bodies and the Minister, whether anything further can be done to maintain the highest standards and limit the more extreme forms of advertising.

Standard and Proprietary Medicines

209. The terms "standard" and "official" are applied to those drugs and preparations described in the British Pharmacopoeia, the British Pharmaceutical Codex and the British National Formulary. The drugs and preparations in the first two publications must comply with the specifications in those books. These specifications are intended to ensure that the materials are of an adequate pharmaceutical standard; they are minimum standards in that manufacturers will work to somewhat higher standards to ensure that their preparations, if tested, are certain to comply. Testing schemes organised by the

Ministry of Health and run by Executive Councils ensure that standard preparations supplied by retail pharmacists comply with the official specifications.

210. The titles of standard drugs and preparations are "free names" which may be used by any manufacturer. The British Pharmacopoeia Commission regularly issues Approved Names for new drugs including many not yet admitted to the standard publications. When, however, the drugs are admitted into one of the three books they become standard. The titles used in the books for preparations containing these drugs are based on the Approved Names. We have commented on Approved Names in our interim report. Representatives of the Commission have told us, however, of the difficulties encountered in coining Approved Names which should, as far as possible, be internationally acceptable. We have also been told that those responsible for preparing the three books endeavour to provide shortened titles for preparations for convenience of prescribers. We accept these comments and urge that prescribers should not be deterred from prescribing by standard names because these names are longer or less readily memorable than the equivalent proprietary names.

211. The authorities producing the British Pharmacopoeia, British Pharmaceutical Codex and British National Formulary generally take as a basis for inclusion of a drug its therapeutic usefulness. Drugs available only as proprietary products are often included in the books and these products thus become standard preparations. To an increasing extent, additions to the official books are in this category. We understand for example that almost all of the new drugs included in the British Pharmacopoeia 1958 are in proprietary form. It is usual to describe these preparations as standard medicines if prescribed by the official title and as proprietaries if prescribed by the trade-marked name. This is, however, a distinction without a difference. Whilst drugs ordered by their standard titles account for about one quarter of ingredient costs, nearly half of this figure relates to preparations available only in proprietary form. The commonly held belief that proprietary products usually have much cheaper standard equivalents is, therefore, an oversimplification. Even where the principal therapeutic ingredient is freely available and it is practicable to formulate a standard preparation similar to the proprietary product, the demand may be so limited that its cost may be at least as high as that of the proprietary.

212. In those instances in which a standard preparation is available only as a single proprietary product, no economy can be achieved by prescribing by the official title. The pharmaceutical industry claims that a well-established proprictary name is an essential safe-guard to protect the interests of those manufacturers who undertake significant research against those firms who do no worthwhile research but who take advantage of anomalies in patent laws to copy the originators' products. This is especially so in certain important export markets. Nevertheless, where drugs retain their popularity for a sufficient time other similar preparations under standard titles or different proprietary names are often introduced. This usually happens when the period of patent protection expires and when the original manufacturer may be expected to have recovered the costs of his research. Under these circumstances, competition may well bring down the price of the preparations and should be encouraged. Prescribers can then help by using standard titles instead of proprietary names. Not only may this encourage price reduction but it may reduce the wastage of

valuable materials resulting from the accumulation on the shelves of retail pharmacies of a variety of substantially identical products with different names. Manufacturers often claim that, although their product is apparently identical with other products, it is, in fact, superior because it has been better formulated. Sometimes formulation can considerably affect the therapeutic efficacy of a drug and where a prescriber is convinced of the superiority of a particular product, it is to be expected that he will prescribe it by its brand name. But, when he does so, the prescriber should be convinced of this superiority by private experience or published evidence and not by unsubstantiated claims by manufacturers' representatives or in their advertising literature.

213. As prescribers cannot be usually expected to know when economies can be made by using non-proprietary names, the obvious deduction is that official titles should always be used on prescriptions in preference to proprietary names. Indeed, for reasons not usually connected with cost, this practice is taught in most medical schools. In practice economies can rarely be achieved by using official titles early in the life of a new drug. We do, nevertheless, urge that the Ministry or any other body charged with informing medical practitioners should let prescribers know as soon as economies are likely to result from using the standard names of any preparation.

214. That economies are possible by using standard names is shown by information in the latest edition (July, 1958) of the Ministry of Health booklet on costs of National Formulary and proprietary preparations which gave the cost to the Health Service of stated quantities of about 430 frequently prescribed proprietaries together with comparable costs of standard preparations which were either identical or were nearly so. A study of this information shows the following:

Table 10

	No.	%
1. (a) Proprietaries with no equivalent (185) (b) Standard preparations available only in proprietary form (60)	245	57
2. Equivalents costing less than specified proprietary*	107	25
3. Equivalent costing more than proprietary†	16	3½
4. Proprietary and equivalent same cost	63	14½
	431	100

Notes:

*Where an equivalent costs less than the proprietary the difference may be marginal due to pricing on different pack sizes or it may represent a fundamental difference in price. Of these 107 equivalents about 30% were up to 6d. cheaper and 30% between 6d. and 1/- cheaper. In about 20% the difference in price exceeded 2/-: in one-third of these the difference was more than 5/-. It must be remembered that in some cases the equivalent is a proprietary also.

†Where the equivalent costs more than the proprietary the difference is generally marginal. Of the 16 equivalents half were only 1d. dearer: only one (1/5d.) was more than a shilling dearer.

215. It is doubtful, however, whether the prescribing of substantially identical standard preparations instead of proprietary preparations would effect great

economies, as many proprietaries differ considerably in flavour, colour or form from the standard preparation of the same drug. Sometimes they are an improvement on official preparations and there is much to be said for making medicines sufficiently pleasant to be acceptable to patients and especially so if these patients are children. There is, however, nothing to justify making medicines excessively attractive (and possibly a danger to small children). Often these very attractive medicines are far more expensive than the alternatives—standard or proprietary—which, while less attractive, are sufficiently pleasant for all normal requirements. It may be suspected that often the sole purpose in developing such products is to create a demand for them by patients. Accordingly we think that doctors should be urged not to prescribe such expensive, "elegant" preparations.

216. Another variation is the inclusion of other drugs subsidiary to the principal ingredient. Frequently these polypharmaceutical products have little or no therapeutic justification. Even if the compilers of the official books wished to include standard equivalents of these, and usually they do not, so many permutations exist that it would be entirely impracticable for them to attempt to do so. In fact, of the 5,000 or so proprietary preparations not advertised to the public, only a small proportion have identical non-proprietary equivalents. The bulk of the preparations described in this paragraph are included in categories 2, 3 and 4 (see paragraphs 25-29 above). Some of these are very valuable medicines and not all of the others are more expensive than simpler preparations having similar uses. Many are more expensive however and it is by reducing the prescribing of these that worthwhile economies could be made without affecting the standard of prescribing. We deplore the proliferation of new products of this kind which tends to confuse the general practitioner and to add to the pharmacist's burden. We recommend that the Minister should consider with the industry and the medical and pharmaceutical professions ways and means of reducing the number of such preparations.

217. Further economies might be expected to ensue if prescribers selected, wherever practicable, the least costly of the variety of effective drugs available. The grouping of standard preparations in the alternative edition of the British National Formulary is already helping prescribers and we recommend that information on the prices of preparations in each group in this book together with those of products of the type described above, similarly classified, should be supplied. It is essential that this information should be genuinely comparative and in a form readily available to the prescriber in his daily practice, for example, as a component of the Prescribers' Handbook described in the interim report.

218. There are thus three important ways in which the prescriber can help to control costs:

(i) by not prescribing expensive "elegant" products when simpler satisfactory preparations of the same drug are available;

(ii) by not prescribing unnecessarily elaborate polypharmaceutical preparations: and

(iii) by selecting from the appropriate therapeutic group the least expensive of the effective drugs available.

219. So much has been said about the cost of proprietary medicines provided

through the pharmaceutical service, that the public may well be inclined to think that proprietary medicines account for a much larger share of the cost of the Service than in fact they do. This is another aspect of the cost of prescriptions which needs to be viewed in the correct perspective. We are informed that orders for proprietary preparations not advertised to the public account for approximately 70% of the net ingredient cost of drugs prescribed under the general pharmaceutical service. On this basis, plus the proportion referred to in paragraph 211 above, the net ingredient cost of proprietaries prescribed by general practitioners in the Health Service in 1957/58 may be as much as £31 millions. This figure has to be considered in relation to the gross cost of prescriptions dispensed in the pharmaceutical service of £63 millions in that year. In relation to the total cost of the N.H.S. of £626 millions, it is not a vast sum. Nevertheless, the Ministry of Health is a very important customer. This is so not merely because it is purchasing for the community as a whole, but also because it creates a large and relatively stable market consuming something like one-third of the output of the pharmaceutical industry. As such, it is certainly entitled to obtain its supplies on favourable terms. By "favourable" we do not imply prices so cut as to permit no margin for the development necessary to keep the industry up-to-date and efficient. But efficient development is quite different from extravagant advertising and expense allowances and other overheads.

220. It has been estimated that, on the basis of net ingredient cost, preparations classified by the Cohen Committee in categories 2, 3 and 4 account for about 90% of the cost of proprietaries prescribed by general practitioners. Therefore these categories are the ones mainly involved if any system of price control is to be effective. It was a recommendation of the Cohen Committee that preparations in these categories should be prescribable under the N.H.S. only if satisfactory price arrangements were made between the Ministry of Health and the manufacturers.

Voluntary price regulation scheme

221. In June, 1957, subsequent to the setting up of the Committee on the Cost of Prescribing, the Ministry entered into an agreement with the Association of British Pharmaceutical Industry for a scheme of price regulation covering preparations in those categories. The scheme, which was to run for a trial period of three years, was aimed at regulating the prices which manufacturers charge for such preparations. The main features of the scheme, on which we have already touched in paragraph 46 above, are set out below:

(I) If any preparation had substantial exports (20 per cent. or more of output) the home price should be no more than the export price;

(II) If any preparation which was not substantially exported had an exact standard equivalent, its price should be no higher than that of the equivalent;

(III) For other preparations, the maximum price should be calculated by the specially constructed trade price formula. This formula added to an allowance nominally related to the cost of basic ingredients certain additional allowances called on-cost and processing and packaging allowances and provision for wholesalers' discount to make up the total price;

(IV) Any manufacturer was free to negotiate a price separately with the Health Departments if he considered the appropriate formula price unsuitable or if for any reason none of the formulae was applicable; Other features of the scheme are

(a) *The "undertaking"*

(V) Because the prices arrived at by using the formulae were sometimes higher than current prices, the A.B.P.I. gave an undertaking that when this was so the current prices would not be increased except where an increase was justified by an increase in costs;

(b) *The "three years freedom"*

(VI) The scheme would apply to a preparation only after it had been on the market for three years (for those 3 years the price would be at the manufacturers' discretion).

(c) *The trial period*

The whole scheme would be on trial for three years, after which the Health Departments and the A.B.P.I. would be free to reconsider it in the light of experience.

222. We are informed that by early 1959 prices had been agreed under the scheme for some 3,200 proprietary preparations representing approximately 88% by value of all preparations falling within the scope of the scheme. Negotiations are still proceeding on the remainder. Three hundred preparations had been reduced in price at an estimated saving to the Exchequer of just over £400,000 per annum.

223. In our view this scheme is a very valuable contribution, enabling a business arrangement to replace the ordinary operation of supply and demand, which is impracticable in this field.

It is a considerable step forward in our view that the industry should recognise and accept the need for price regulation. We understand that the long-term significance of the scheme is under review.

224. But there is a very important factor in the cost of proprietary preparations which calls for special consideration. The pharmaceutical manufacturers have to rely largely upon the profits of proprietary medicines to finance their research expenditure. If this source of finance were not available to the manufacturers money for research would have to be found elsewhere. The Ministry of Health does not undertake research into the discovery of new drugs.

The whole question of research is, to our minds, of such importance that we have given most serious attention to it, as the following section of our report will show.

CHAPTER 11
RESEARCH WITHIN THE INDUSTRY

225. We have carefully considered the role of research in relation to the costs of prescribing. We have discussed the problem with the Association of British Pharmaceutical Industry, we have heard evidence from Professor Sir

Charles Dodds, Director of the Courtauld Institute of Biochemistry at the Middlesex Hospital, and we have had unofficial contacts with certain firms who are most deeply involved in research in this country. We are very grateful for the help we have received.

Expenditure on Research

226. The Association of British Pharmaceutical Industry estimate that £4 millions per annum is spent on research in this country. This figure, which is considered inadequate, compares with reported annual research expenditure of £7 millions in Switzerland and £43 millions in the U.S.A. Thus research is costly, but no major pharmaceutical firm can continue to flourish without undertaking it on a scale which enables it to compete with other firms at home and abroad. In Great Britain firms may spend from £100,000 to £1 million per annum on research. Some firms abroad may spend up to £3 or 4 millions per annum.

Not all firms are capable of doing or willing to undertake research. Certain firms make large profits on new preparations, which are not therapeutically superior to those already in existence, and devote no part of their profits to significant research. The following paragraphs apply only to the firms who do undertake such research.

Nature of research

227. Research in the pharmaceutical industry is of different kinds. There is first and foremost the search for new and more effective drugs; this is often called fundamental research. The word 'fundamental' here does not mean 'academic' in the sense that the research has no immediate practical value. Most of a pharmaceutical firm's research must necessarily be 'applied' to the attainment of well-defined objectives, i.e., the discovery of therapeutically valuable and profitable drugs. Then there are various types of developmental research such as the development of methods of formulation of new and existing drugs for therapeutic use, and the development of more economical methods of production. It is difficult to separate these various types of research completely from each other but, though fundamental research is so vitally important, its results go to waste unless extensive development is carried out at the same time.

228. There is one simple basic reason why fundamental pharmacological research is so costly. There are no satisfactory theories of drug action to provide a sure basis for predicting the therapeutic effects of new chemical compounds. It is not possible for an organic chemist to write down the formula of a new drug and guarantee that it will be a cure for cancer, high blood pressure, schizophrenia or any other disease. If he could, the costs of research and the costs of prescribing would be greatly reduced. In practice pharmacological research is a matter of trial and error, with only very occasional success.

229. Organised pharmacological research is a collaborative effort in which many different types of scientists take part. Organic chemists, biochemists, physical chemists, pharmacologists, bacteriologists, parasitologists, pathologists, immunologists, pharmacists and medical practitioners are all concerned with different aspects of the work. Given adequate laboratories and

equipment, the success of the research depends mainly on the quality of the scientists engaged in these various fields. Highly qualified graduates are needed as heads of the various departments with a research director to stimulate and co-ordinate their activities. The rest of the staff consists of junior graduates (with B.Sc. or Ph.D. degrees), technicians and administrative workers of various kinds.

A large British pharmaceutical firm may employ 100-150 graduates plus a similar number of unqualified assistants. Salaries and wages are generally comparable with those offered in University departments or the Medical Research Council. Promotion depends more on merit than on seniority.

230. As with so many kinds of research today, it is most important to collect a team and to keep them working together for periods of years so that their cumulative understanding of problems may be used to the best advantage. This can only be done if research expenditure can be planned over a long enough period for the achievement of fruitful results. It may mean looking ahead for 3-5 years. Since salaries and wages account for about two-thirds of the running costs of a pharmaceutical research organisation it is clear that they represent a permanent and considerable financial commitment for any firm which undertakes research on a significant scale. The remaining one-third of annual expenditure includes costs of materials and experimental animals and overheads.

In addition to running costs there must at times be capital expenditure on new buildings and plant. This may amount to £1-2 millions where large expansions take place.

The laboratories built by some pharmaceutical firms are comparable in design with those now being built for Universities but the firms' laboratories are generally better equipped with apparatus.

231. The work of a pharmaceutical research laboratory involves the synthesis of large numbers of quite new chemical compounds which are then tested for the actions which their chemical nature suggests they should exert. In addition, all new drugs are 'screened' for all sorts of other actions as well; in this way many unexpected valuable developments have occurred.

When laboratory tests indicate that a new drug is likely to be of value in the treatment of human disease it is very carefully studied for its toxic effects in animals. If the drug is not harmful in these tests it may then be submitted for trial in human beings. This usually involves initial tests on volunteers before the drug is given to patients. A preliminary trial on patients will show whether the drug is promising enough to be submitted for a controlled clinical trial (see paragraphs 261-267).

When a drug is to be submitted for clinical trial further developments are necessary which may add to the costs of the research. The production of a chemical on a small scale for laboratory experiments may cost little, even though the method be complicated, but production on a larger scale for a full trial may be expensive and may involve further technical research. Furthermore, research on formulation is sometimes needed before a new drug can be presented for therapeutic use.

232. It may be reasonably asked how much research is necessary before a valuable new drug is discovered. This is a difficult question to answer. Really

outstanding drugs are still very few in number and if a firm makes one major advance in 10-20 years it is doing very well. Less notable discoveries are more frequent but even here many hundreds of new chemical compounds may have to be synthesised and tested before a new drug is introduced for clinical use. Apart from the time and effort which are put into the unpredictable laboratory investigations, there is always a big risk involved in placing a new drug on the market for general therapeutic use. Production costs of a new compound are frequently high, possibly some hundreds of thousands of pounds, and the price charged is related to these as well as to the making of sufficient profit to finance further research. Research in production methods has to be undertaken by the industry even when the initial research has been done elsewhere. There is no certainty about the profits since other firms may be competing in the same field. It frequently happens that a drug which is considered at one time to be the best for a given purpose is ousted by a better drug produced by another firm. There must be very few industries in which it is possible for a firm to lose a market so quickly as in the pharmaceutical industry. The staff and equipment which have been organised to manufacture a successful product may be a source of profit one year and a liability the next. Competition is inherent in the system of private enterprise and where it functions freely it should lead to the discovery of more effective drugs. In the case of established drugs, competitive research on methods of production does in fact reduce the price. Where there is a monopoly of production by a single firm the price may remain high for a long period; this only occurs when the drug concerned has a unique and considerable therapeutic value.

The discovery of new drugs

233. The best way to understand how new drugs are discovered is to consider a few examples from the recent past. There are two points to be emphasised at the outset:

(i) The discovery of new drugs is related to developments in other branches of medical science. For example, modern chemotherapy (the treatment of infections by drugs) could only have arisen after the science of bacteriology had been established. The future chemotherapy of cancer awaits a fuller understanding of the nature of this disease.

(ii) New drugs have been discovered in University departments, in medical research organisations such as the Medical Research Council, or in the laboratories of the pharmaceutical firms. When a drug is discovered in a University department or medical research organisation its large-scale manufacture for therapeutic use can only be carried out by a pharmaceutical firm.

In recent years the firms have played an increasingly important role in the discovery of new drugs, as well as in their manufacture.

We give the following brief illustrations of how some of the significant discoveries of the last thirty years were made.

Sulphonamides (Sulpha drugs)

234. The first of these drugs was introduced in Germany in 1935. It was the

culmination of the pioneer work of Paul Ehrlich, the founder of modern chemotherapy, who had himself discovered Salvarsan, the first effective remedy for syphilis.

Ehrlich was always intrigued by dyes and in fact all the chemotherapeutic remedies which he discovered were dyes. It was therefore appropriate that the first drug to be effective in the treatment of bacterial infections should be a dye, a sulphonamide called 'prontosil red', and that it should have been discovered by Domagk (a bacteriologist who received the Nobel Prize for this work) and Mietzsch and Klarer (organic chemists) all working in the laboratories of the German firm I.G. Farbenindustrie (Dye-stuff industry).

235. The manufacture of prontosil red was protected by patents. This prompted research workers in other countries to find out how it worked, and in 1936 Tréfouëls, Nitti and Bovet (also a Nobel Prize winner), of the Pasteur Institute in Paris, found that prontosil red was converted in the body into a simpler chemical compound, sulphanilamide, which accounted for the antibacterial action. This was important because the manufacture of sulphanilamide was not restricted by patents. Indeed, sulphanilamide had first been made by an Austrian chemist named Gelmo in 1908 and, had its anti-bacterial action been discovered then, millions of lives might have been saved before 1935. This highlights the problem of all pharmacological research—how to relate the chemical nature of a substance to its action in the body.

236. Once sulphanilamide had become established, organic chemists in pharmaceutical firms all over the world began to modify its structure in the hope of producing more effective and less toxic drugs. The first improvement was the discovery by Sir Lionel Whitby in the Bacteriology Department of the Middlesex Hospital of the value of sulphapyridine (M. & B. 693) for the treatment of pneumonia. The drug had been made by Dr. Ewins of the firm May and Baker (hence the letters M. & B.).

237. In giving his evidence Sir Charles Dodds told us of the disastrous consequences of this discovery for certain American pharmaceutical firms which produced the serum previously used for the treatment of pneumonia. Sulphapyridine made serum treatment obsolete almost overnight, and the expensive plant used for making the serum, which could not be used to manufacture the drug, immediately became a liability. This shows how a discovery which is beneficial to the public and to the firm which makes it can deal other firms a serious blow.

All subsequent sulphonamides, such as sulphathiazole, sulphadiazine and sulphadimidine were developed in the laboratories of pharmaceutical firms.

238. The discovery and development of the sulphonamides illustrate many of the features of large-scale pharmacological research, viz. (i) the 'lucky break' after years of systematic work based on the hypothesis that antibacterial dyes would be found; (ii) the finding by others that it was not the dye, but a derivative of it, which was the active agent; (iii) the fact that the derivative was not restricted by patents and could be manufactured cheaply; (iv) the later development of more effective and less toxic sulphonamides, and (v) the indirect competition with other methods of treatment of pneumonia.

239. The greatest importance of the sulphonamides lies not so much in their present day value, though this is not inconsiderable, as in their demonstration that antibacterial chemotherapy was possible. They created the climate which

favoured the discovery of the therapeutic value of penicillin. Comparable discoveries in other fields might provide the impetus and direction for research on the treatment of such conditions as cancer, arterial disease and mental disorders.

Penicillin

240. If the sulphonamides were discovered and developed almost exclusively by the pharmaceutical industry, penicillin is the outstanding contribution of academic research to the treatment of disease.

241. Penicillin was introduced in two stages. First came the chance observation by Sir Alexander Fleming at St. Mary's Hospital in 1928 that a contaminating mould inhibited the growth of staphylococci on a culture plate. Others may have made this observation before but he was the first to attach significance to this phenomenon. He showed that the mould, Penicillin notatum, produced a substance which he named penicillin. He demonstrated that penicillin killed off certain types of bacteria growing in cultures and he tried to treat infected wounds with local applications of the substance. He was not successful in this because the amounts of penicillin which he could extract from the mould were too small, and the chemists found the substance too unstable for isolation. By 1932 work on penicillin stopped, largely because of the existing scepticism concerning the possibility of antibacterial chemotherapy.

242. The discovery of the sulphonamides in 1935 changed this outlook completely and gave new hope for other developments in this field. In 1939 Sir Howard Florey, Professor E. Chain (who together with Sir Alexander Fleming were later awarded the Nobel Prize) and their colleagues in the University Department of Pathology in Oxford began their work on penicillin with the aid of a grant from the Rockefeller Foundation. They first discovered how to increase the yield of penicillin extracted from the mould, they then demonstrated its remarkable actions on infections in animals and finally they made enough penicillin to reveal its dramatic actions in patients.

243. When they had done this it was obvious that the large-scale manufacture of the drug could only be handled by the pharmaceutical industry. In 1940 no British firm was able to undertake this task and the development of processes for the production of penicillin on a commercial scale was carried out in the U.S.A. No patents for penicillin had been taken out, either in 1929 or in 1939/40, but British firms have had to pay royalties for the use of production techniques in the bulk manufacture of penicillin in this country: this represents a small element of cost in the price of penicillin to the National Health Service. Sir Charles Dodds informed us that if a comparable discovery occurred today the National Research Development Corporation would take care of the patent position.

So far all the penicillin used in therapeutics has been made by microbiological fermentation. A recent British discovery raises hopes that many new penicillins will be synthesised, which may overcome the limitations of the available forms of penicillin, particularly with respect to sensitivity reactions and resistance to staphylococci.

Streptomycin

244. The discovery of the first antibiotic, penicillin, opened the way to a vast

volume of research into other natural sources of antibacterial agents. The most important development after penicillin was the discovery of streptomycin in 1944 by Waksman and his colleagues of Rutgers University in the U.S.A. This was the first effective drug for the treatment of tuberculosis and, in conjunction with other drugs, still forms the basis of chemotherapy for this disease.

Other antibiotics

245. All subsequent antibiotics have been discovered by scientists working in the laboratories of pharmaceutical firms, almost all in the U.S.A. The drugs include chloramphenicol, the tetracyclines (aureomycin, terramycin, achromycin), erythromycin, polymyxins, spiramycin, novobiocin and oleandomycin. Their discovery and production have cost enormous sums of money.

Stilboestrol

246. Stilboestrol is an artificial oestrogen (female hormone) which is used chiefly for the relief of menopausal symptoms and is of particular importance as the first drug to be effective in the treatment of any form of cancer (cancer of the prostate). Its discovery is another example of academic research leading to important practical results.

247. Sir Charles Dodds and Dr. W. Lawson, working in the Courtauld Institute of Biochemistry at the Middlesex Hospital, studied the relation between chemical structure and oestrogenic action in many compounds and, in final collaboration with Sir Robert Robinson in Oxford, they prepared the substance stilboestrol in 1938. This has all the actions of the natural oestrogenic hormones but has the considerable advantages that it is active when given by mouth and is much cheaper to make. No patent was taken out and the large-scale manufacture of stilboestrol was soon undertaken by many pharmaceutical firms.

In addition to its therapeutic effects in human beings stilboestrol has some interesting agricultural applications. When administered to old cock birds it produces an increase in weight, due to deposition of fat, and also makes the flesh more tender (like capons). Stilboestrol also increases the rate of growth of cattle and is very widely used for this purpose by farmers in the U.S.A.

Thus an academic study may have surprisingly useful consequences.

Cortisone

248. The discovery of cortisone was the last link in a chain of events which began over a hundred years ago when a Guy's Hospital physician, Thomas Addison, described the symptoms which develop when the adrenal gland is destroyed by disease (Addison's disease). Experimental physiologists showed that the adrenal cortex was essential to life and by 1930 extracts of the gland were effectively used in the treatment of Addison's disease. Later many steroid compounds were isolated from the adrenal cortex by Reichstein in Basle (working in both the University and in the Ciba Laboratories) and by Kendall at the Mayo Foundation in the U.S.A. Kendall isolated compound E (cortisone) in 1938. In this case the decisive advance was made by a physician, Dr. Philip Hench of the Mayo Clinic. He had long been interested in the remissions (periods of improvement) which occur in patients with rheumatoid arthritis

during pregnancy or when jaundice supervenes. He tested many steroids in an attempt to simulate these states and finally, in 1948, he tried cortisone with immediate dramatic results. The extremely difficult technical problem of commercial production of cortisone was tackled by the firm of Merck & Co. in the U.S.A. The important achievements of British firms in this field should not be overlooked.

At first, when cortisone was made from bile acids there were some thirty-five stages in the synthesis. Even with improved methods of manufacture about ten stages are involved. It is no wonder that the drug is costly to produce.

Further developments, such as the discovery and manufacture of hydrocortisone and of prednisone and prednisolone and of their fluoro-derivatives came from the pharmaceutical firms. Apparently as the result of competition and as technical advances in manufacture have been introduced, the prices of cortisone and its derivatives have recently been reduced.

249. These illustrations serve to show the importance of doing nothing to circumscribe the wide range of research activities upon which the discoveries of new drugs depend or the incentive to widen it.

Research Association

250. Research associations have been set up in many industries to deal with problems that concern all the firms in a particular industry. These associations receive government grants through the Department of Scientific and Industrial Research. We thought that a Research Association might help the pharmaceutical industry to avoid duplication of research in fields in which several firms have a common interest. We put this suggestion to the A.B.P.I. and were told that the pharmaceutical industry is not suitable for a research association, a view with which Sir Charles Dodds agreed. Duplication of research is said not to occur to a significant extent in this country since major firms specialise in particular fields, and where duplication does occur it may be beneficial by providing the stimulus of competition.

Members of a team doing fundamental research in a particular firm have the great advantage that they are in constant touch with each other, so that new and unexpected developments can be freely discussed without delay. Such collaboration would be more difficult if part of the work were to be carried out by a central research association. If all fundamental research were confined to such an association there would be no competition, and unorthodox developments would be discouraged. This is most undesirable.

Collaboration and interchange of information does take place to some extent between individual firms. This has occurred particularly in the development or manufacture of certain substances, e.g., insulin, but it does not seem to us likely that fundamental pharmacological research could be effectively carried out by a research association.

Financing Research

251. We have been informed by the A.B.P.I. and by certain individual firms which do research on a significant scale that research is financed out of the undistributed profits as a whole. It is difficult to specify the cost of a single successful product since a research programme involves the simultaneous pur-

suit of many different, though interrelated, lines of investigation. The discovery of one successful drug is an incident (or perhaps an accident) in the course of work carried out over a period of months or years. A research unit functions as a whole, marginal advances bringing in profits which may enable the firm to continue its research in the hope of making a major discovery. Actually the method of financing research varies greatly from firm to firm. Some firms make their profits from the sale of 'ethical' drugs (i.e. drugs which are only obtainable by a doctor's prescription); some firms make their profits by sales of medicinal or other products direct to the public; with some firms exports provide the major proportion of the profits which are devoted to research.

It would be very difficult to estimate the efficiency of the research effort made by the pharmaceutical firms. We have not attempted to do this.

Factors Favouring Profits for Research

252. The A.P.B.I. and certain individual firms have told us that there are three important factors which help them to make sufficient profits in competitive markets to enable them to finance their research, viz.

(i) Patents on products or processes of manufacture;
(ii) Proprietary names; and
(iii) Prices. Under the price agreement with the Ministry of Health, the firm determines the price of new preparations sold to the N.H.S. for three years, after which the price is adjusted according to the criteria set out in paragraph 221 above.

253. *Patents:* Patents are of course a valuable protection in those parts of the world in which they operate and are respected. However, patent rights may be contested and legal costs are involved in their defence.

254. *Proprietary Names:* The A.B.P.I. have told us, and several leading pharmaceutical firms have stressed, that proprietary names are indispensable in the marketing of their preparations, especially abroad. Some firms say that proprietary names are worth more to them than patent rights. Proprietary names are the basis for competition between firms. Where there is competition price reductions occur as new and cheaper methods of production are developed. This has happened for example with insulin, penicillin, chloramphenicol and recently with cortisone derivatives. Where there is little or no competition, as with the very useful but expensive tetracyclines, there has been no reduction in price.

255. *Prices:* The price of new preparations is fixed by the firms on the basis of the costs of discovery, development and production; of probable demand; and of the price of other products in direct and indirect competition.

Measures to encourage fundamental research

256. It must be apparent from what we have said that the objective should not be to cut down research expenditure but rather to encourage the few firms which do the fundamental research essential for progress in therapeutics. These firms are prepared and willing to do it provided that they can continue to make the necessary profits. Firms doing research should clearly have some advantages over firms doing no research, but it is not desirable that research should

be restricted to certain firms, since new firms may have valuable contributions to make. The following courses of action are open:

(i) *Conditions could be left as they are.* The research effort has been steadily increasing in recent years and will presumably continue to increase in the future. It is important to remember that much of the research is financed by profits made outside the N.H.S. To this extent the Exchequer is getting the advantages of research without paying the full cost.

(ii) *Government grants could be given to firms which do fundamental research.* To be effective these grants would have to be given without too many strings and for a period of years without expectation of quick returns. Those firms in receipt of grants would be expected to reduce the price of their products.

The Socialist Medical Association recommends public ownership of the pharmaceutical industry. It is not clear what form this would take or how this would increase the efficiency of the industry.

(iii) *Special allowances could be made when costing prices to cover research overheads.* In other words the calculation of the fair price should allow a full share of a firm's research expenditure, as distinct from other overheads, as a special charge wherever a proper research department is being maintained, provided that the research department was open to inspection. Selling propaganda, advertising and give aways would have to come out of the limited amount permissible for general overheads. If, therefore, a lot was spent on such things it would have to mean less for expense allowances.

257. The benefits which have resulted from developments in pharmacology and chemotherapy are widely recognised. If further advances are to take place the conditions for successful research must be assessed and correlated with other factors concerned with the costs of prescribing. Temporary economies might be effected by restrictive measures which would discourage the British pharmaceutical industry from its research activities. In the long term this would mean that fewer new drugs would be discovered or developed in this country. British firms would lose their valuable export markets, we should become increasingly dependent on foreign firms for new advances and the final result would be a further increase in the cost of prescribing. Research is essential if the people of Great Britain are to reap the full benefits of advances in drug therapy.

Conclusions on Research

258. Our investigations into the research activities of the British pharmaceutical industry lead us to the following conclusions:

(i) The pharmaceutical firms which do research are making a valuable contribution to the N.H.S. Such research is essential for advances in therapeutics.

(ii) The costs of research on therapeutic and prophylactic products are considerable but are no higher than in other countries making a comparable effort.

(iii) Firms should be encouraged to increase their research effort. The

conditions which favour profits for research, such as patent rights, the publicising of proprietary names and the price agreement with the Ministry of Health should be accepted. No changes in the organisation of the pharmaceutical industry could be recommended without a much more detailed enquiry than we have been able to make.

(iv) Research is a co-operative enterprise on the part of those who conduct it in University departments, research organisations or pharmaceutical firms. There must also be the wider co-operation between research workers of all kinds and doctors, pharmacists and the Ministry of Health. Therapeutic research should be regarded as a normal clinical function and not as a remote activity for the select few.

(v) The medical profession should encourage therapeutic research, but in the interests of their patients must give a completely independent assessment of the results. Firstly, all new drugs should be subjected to clinical trial and secondly, there must be a vast improvement in the dissemination of impartial information to doctors. In this way the firms would be subjected to fair competition without restriction in the conduct of their research.

General Conclusions

259. So far as the overall picture of the British pharmaceutical industry is concerned we would sum up by saying

(i) The Industry is playing an all-important and progressive role in the development of the N.H.S. and the export trade.

(ii) The doctor's freedom to prescribe in the N.H.S. inevitably encourages extravagant sales propaganda, some of which we believe is undesirable.

(iii) The cost of research must be provided in the prices of proprietary medicines, and a good profit record is essential if the industry is to be encouraged to invest capital in continued development projects.

(iv) The pharmaceutical industry is one which has to face unusual risks. The sudden discovery of a new therapy anywhere in the world can put a product, on which a great deal has been spent, off the market overnight.

260. We accordingly recommend that any pricing arrangements between the Ministry of Health and the British pharmaceutical industry should be designed firstly, to make full allowance for genuine research expenditure so as to enable a vital industry to make its maximum contribution to the development of drug therapy and also to the export trade, and secondly, to discourage extravagant overheads and sales promotion.

CHAPTER 12

CLINICAL TRIALS

Need for Clinical Trials

261. Many doctors feel that new drugs should not be used in the National Health Service until they have undergone independent clinical trial. The present arrangements for the organisation and interpretation of such trials, and for publication of the results are inadequate. Better organisation and speedier publication could greatly influence the prescribing practice of general practitioners.

We do not recommend a ban on the prescribing of new drugs but we do suggest that, until the results of clinical trials are known, doctors should only prescribe new drugs when existing drugs have failed.

262. For economic as well as for other reasons it is important that new drugs should be submitted to early clinical trial. This applies not only to drugs which are claimed to have new therapeutic effects but also to those which are put forward as minor improvements on existing drugs. The pharmaceutical firms which introduce these new drugs will presumably have carried out preliminary trials which have shown that the drugs are safe and sufficiently promising to be worth putting on the market. It is then highly desirable, in the interests of all concerned in the National Health Service, that an independent controlled clinical trial should be carried through as soon as possible.

(a) A drug with a new type of therapeutic action, e.g. the oral antidiabetic compounds, should first be studied in hospital departments which have all the facilities for detailed investigations. Such a trial involves not only an assessment of the drug's therapeutic merits and drawbacks but also a study of its mode of action so that the indications for its use can be understood.

(b) Most new drugs, e.g. hypnotics, antihistamines, cough suppressants or analgesics, are not claimed to be more than minor improvements and the important question here is usually—how does the new drug compare with existing drugs used for the same therapeutic purpose? The clinical trial for this type of drug does not usually require such an elaborate organisation as for the really new type of drug; and in many cases the trial could be carried out in hospital out-patient departments, in the wards of the large non-teaching hospitals or in general practice. Facilities for such comparative trials are much greater than is perhaps realised. If expert statistical advice is given in the planning of the trial and in the interpretation of results, much valuable information could be obtained without interfering greatly with routine clinical work. The hospital authorities should encourage clinical trials and should give those who take part in them time and facilities for this work. Participation in clinical trials would not only help to provide valuable information but would increase the doctor's enthusiasm for his work.

Organisation of Clinical Trials

263. Some pharmaceutical firms have satisfactory private arrangements for the carrying out of independent clinical trials of their new drugs. Other firms have told us that existing facilities for clinical trials are inadequate. It therefore seems desirable that the facilities for clinical trials should be expanded. This raises further questions:

(i) Should there be any central body for the organisation of clinical trials?

(ii) Should this body give its seal of approval (or disapproval) by an authoritative opinion based on the trials which it has organised?

264. These questions may be discussed by considering the possible roles of existing organisations.

The Medical Research Council. The Medical Research Council has pioneered the development of clinical trials in this country and has established standards of procedure which can readily be applied by others. We think that the Medical Research Council would still wish to organise studies and trials of some of the new drugs of type (a). There must, however, be many drugs and preparations, particularly those of type (b), which lie outside the Medical Research Council's sphere of interest. We feel that some other body should be responsible for trials of such drugs and preparations, though advice from the Medical Research Council on the conduct of trials would be most helpful.

Professional Bodies. The Royal Colleges of Physicians, Surgeons, and Obstetricians and Gynaecologists, the College of General Practitioners and the British Medical Association could help in the organisation of clinical trials. They might be asked to collaborate in the formation of a Clinical Trials Committee which would consider requests from firms for clinical trials of their products. The Trials Committee would select from their fellows and members the names of those whom they knew to be willing and able to carry out clinical trials. The firms would be introduced to the appropriate doctors who would then undertake the particular trial. If these professional bodies organise clinical trials it would further be helpful if they would also interpret the results of the trials and publish their findings, preferably in the proposed new " Prescribers' Journal" (see paragraph 163).

Cost of Clinical Trials

265. We think that the pharmaceutical manufacturers should pay the costs of clinical trials. We do not think it desirable that doctors should be paid for participation in clinical trials since such payments might influence their judgment.

Conclusions

266. In essence our proposal is that clinical trials of new drugs and preparations should be organised by the professional bodies who should also be asked to take responsibility for interpretation of the results of the trials. It would be convenient if the professional bodies would perform both functions.

It is not suggested that all trials should be organised in this way. Firms who wish to continue to make their own arrangements for clinical trials should be encouraged to do so. Our aim is to suggest how these trials could be facilitated. However, some authoritative interpretation of the results of all clinical trials is highly desirable.

267. We recommend that the professional bodies be asked to consider the whole question of clinical trials. We suggest that they should take the responsibility of advising doctors on the value of new drugs.

PART VI

CHAPTER 13
RETAIL PHARMACISTS AND DISTRIBUTION OF MEDICINES

268. Over 200 million National Health Service prescriptions* were dispensed in 1958 in retail pharmacies in England and Wales. This represents about 99 per cent of all such prescriptions written by general practitioners, the remainder being dispensed by doctors in rural areas where retail pharmacists are not readily accessible. Pharmacists who contract with Executive Councils to supply medicines must comply with terms of service laid down in National Health Service Regulations.† For example, dispensing must be performed either by or under the direct supervision of a registered pharmacist and all medicines must be of the quality specified. Executive Councils are required by the Regulations to operate schemes for testing the quality and amount of drugs and appliances supplied by contractors.

Chemists' remuneration

269. Chemist-contractors are paid the basic price of the medicine supplied plus an oncost of 25 per cent, a small container allowance and a dispensing fee. Broadly speaking, the oncost is the equivalent of the gross profit in other retail transactions and covers overheads, loss on dead stock, interest on capital, etc., for that part of the business concerned with National Health Service dispensing; and dispensing fees are payment for the pharmacist's professional services in dispensing the prescriptions. The pharmacists' remuneration is periodically reviewed by the appropriate Whitley machinery and is based on investigations in which the chemist-contractors have fully collaborated. Recent investigations have been designed to establish that the on-cost allowance and dispensing fee together are sufficient to cover all costs and give a modest profit margin in addition. It has been suggested to us that 25 per cent on-cost is too high for expensive medicines. It is not justifiable, however, to isolate individual transactions in assessing remuneration and we do not regard an on-cost of 25 per cent as being in any degree excessive for retail transactions. If these medicines were sold over the counter privately the prices would be higher than those paid by the Ministry and this is usually true even when dispensing fees are added.

Central purchase and distribution of medicines

270. Several proposals have been considered for reducing the cost of the

*Including a very small percentage of dental and hospital prescriptions and some for Service Departments.

†N.H.S. (General Medical and Pharmaceutical Services) Regulations, 1954. S.I. 1954 No. 669, as amended.

pharmaceutical services. For example, it was suggested that the Ministry of Health should purchase medicines in bulk and be responsible for their distribution. The basis for this suggestion is that a central purchasing authority would be able to obtain from manufacturers medicines at appreciably lower prices than those paid when the same medicines are bought in smaller quantities by individual pharmacists. The factors which make it essential for pharmaceutical manufacturers to obtain an adequate return for their expenditure on research and development are considered elsewhere in this report. If the drugs were purchased centrally the prices paid would have to be such as to provide this same overall financial return to the manufacturers to enable them to continue research at a level vital to the maintenance of the British pharmaceutical industry. It does not therefore follow that the same low prices would be acceptable to manufacturers for the bulk of their output as those which can be offered in special circumstances, e.g. to some hospitals, for a relatively small fraction of that output. The central purchasing authority would have to provide the same services as those now given by the pharmaceutical wholesale trade, such as stocking a wide range of materials, repacking in small batches and transporting to local dispensing points. It would have to be responsible for ensuring a supply of every medicine, wherever required, and in order to protect itself it would have to indulge in most extravagant stock carrying. The greater part of the business of the pharmaceutical wholesale firms has nothing to do with the Health Service and this part therefore carries the greater proportion of their running costs. If N.H.S. medicines were bought centrally all the overheads of distribution would have to be added to the basic cost of N.H.S. medicines. Indeed the high cost of setting up such a service as well as the administrative expenses often associated with central organisations would almost certainly increase the cost of the medicines rather than reduce it.

Distribution through Health Centres

271. A second proposal was that medicines should be distributed to patients through dispensaries at Health Centres or similar institutions. This proposal we also rejected after careful examination. The primary consideration should be to ensure a pharmaceutical service which is efficient and reliable and convenient for patients and their relatives and friends who collect the medicines. The service provided by chemist-contractors has met these requirements. The retail pharmacies belonging to chemist-contractors are, by force of ordinary economics, situated in localities convenient to the great majority of the public. If Health Centres were to take over N.H.S. dispensing, the patients or those who fetch their medicines would, in many instances, have to travel long distances. The alternative of small dispensaries as widely scattered as retail pharmacies would be hopelessly expensive. Furthermore, there would not be enough pharmacists available to provide an adequate pharmaceutical service. The large number of retail pharmacies is only economically possible because two thirds of their turnover is obtained from ordinary business and only one-third from the National Health Service.

The pharmacists and the Ministry of Health

272. We therefore accept the present system for supplying N.H.S. medicines through the established retail channels as more satisfactory than any other suggested to us. Nevertheless, this system is a business arrangement between

the pharmacists and the Ministry of Health; both parties should do all that they can to provide an economical pharmaceutical service; and chemist-contractors should employ their knowledge and experience to this end. For example, the basic costs of medicines should be kept as low as possible and this implies keen buying and efficient stock-keeping. The prices which the Ministry pays should be based on prices concordant with these principles and should be reviewed at regular intervals. The Ministry for its part should try to avoid introducing regulations which impose additional tasks on chemist-contractors and so increase their overheads. Payments should be made as promptly and correctly as possible (in our interim report we recommended an investigation into full pricing to this end). The Ministry should also help pharmacists over the serious problem of stocking by continuing to encourage doctors to use non-proprietary names where these would help (see paragraph 212); and by encouraging the industry to rationalise pack sizes, where practicable, and prescribers to specify quantities based on these sizes. This would not, of course, prevent the Ministry from negotiating prices with chemist-contractors based on large dispensing packs where the product is widely prescribed (see paragraph 74).

Liaison with general practitioners

273. We have been told in evidence that some practitioners obtain information from their local pharmacists which is very helpful to them in prescribing. In most hospitals the pharmacists are regarded by the medical staff as the obvious source of information and advice on pharmaceutical matters. Although in general practice there exists at present professional co-operation between many individual prescribers and pharmacists and occasionally between local groups of both professions, we believe that this collaboration could be extended with beneficial results. One such result might be to reduce wastage of expensive drugs. We therefore recommend that the Ministry of Health should invite the appropriate medical and pharmaceutical organisations to discuss methods for improving professional collaboration, particularly between local groups of general practitioners and retail pharmacists.

PART VII
METHODS OF CHARGING AND RESTRICTION ON QUANTITIES

CHAPTER 14
METHODS OF CHARGING

274. In helping us to consider the effect of prescription charges on the drug bill the Committee are greatly indebted to Dr. J. P. Martin and Mrs. Sheila Williams who submitted a memorandum* in which they analysed the incidence and effects of prescription charges.

275. If the results disclosed by their findings had been forecast by a reliable scientific survey we cannot help wondering whether charges would have been introduced, at any rate in the present form, for it is difficult to avoid the conclusion that the Ministry of Health must have been disappointed by the extent to which the expected financial results have been frustrated by a change in doctors' prescribing habits.

276. So far as the period 1952-56 is concerned, when the charge was one shilling per form, the authors' estimate of the financial effects of imposing prescription charges is given in the following table†:

Table 11

Revenue from Charges on Prescriptions dispensed by N.H.S. Chemist Contractors (England)

Year	Actual Revenue £ ,000	Savings to patients due to increase in prescriptions per form £ ,000	Total Actual plus 'lost' revenue (sum of cols. (2) and (3)) £ ,000	Charges refunded by the National Assistance Board £ ,000
(1)	(2)	(3)	(4)	(5)
1952 (from 1st June)	3,122	265	3,387	181
1953	5,943	526	6,469	390
1954	5,843	591	6,434	432
1955	6,054	576	6,630	404
1956 (to 30th Nov.)	5,741	544	6,285	434
Totals	26,703	2,502	29,205	1,841

*Subsequently published in part in the *Lancet*, 3rd January, 1959.

†The basis on which the estimates quoted in the table were calculated is explained in Appendix IV of our report.

277. Taking the complete year 1955 as a guide, the authors estimated that the actual gross revenue which the charges could have been expected to yield in that year was £6,630,000. This figure was, in fact, reduced by savings to patients due to the avoiding action taken by doctors who wrote more prescriptions per form (£576,000) and charges refunded by the National Assistance Board (£404,000). If we deduct the total of these two figures (£980,000) from the gross yield which could have been expected, we are left with an estimated net revenue to the State of £5,650,000. Presumably there must have been some time and cost involved in collecting this revenue on the part of doctors and pharmacists, as well as administrative expense in checking and accounting for it. The figures quoted above make no allowance for overheads of this kind.

278. The fact that the Government decided to alter the method of charging in December, 1956, would appear to show that they were not satisfied with the results. Whilst they were no doubt actuated by a desire to increase the net yield of the charges, they were hoping presumably to devise a system which would do more to stimulate economy on the part of doctors and patients and, at the same time, counteract the avoiding action taken by doctors in writing more prescriptions per form.

279. With the change-over to charging a shilling per prescription, a substantial increase in the revenue from charges must have been expected. Indeed from statements made by the Minister of Health in the House of Commons it was anticipated that the charge per prescription would produce an extra £5 million per annum in revenue. This was presumably arrived at by calculating that there would be over 200 million prescriptions per annum yielding more than £10 million as against the yield of approximately £6 million under the previous system. In addition it was no doubt hoped that the charge per prescription would encourage patients to buy any medicines costing one shilling or less for themselves without bothering doctors to prescribe them.

280. On the basis of information provided by the Joint Pricing Committee and the National Assistance Board, Dr. Martin and Mrs. Williams compared the position in 1956 and 1957, as follows:

Table 12

	1956	1957	Difference
Total Cost of Prescriptions* (England)—to nearest £1,000	£50,450,000	£54,568,000	£4,118,000
Revenue from charges (England)	£6,457,000	£9,657,000	£3,200,000
Charges for drugs and appliances refunded by National Assistance Board	£434,000	£890,000	£456,000

**Note by Dr. Martin.* "Corrected for purposes of comparison by subtracting 2½d. extra dispensing fee for all prescriptions dispensed from 1st December, 1956."

281. It will be seen from these calculations that, compared with 1956 (which had 11 months under the shilling per form system), the revenue in 1957 increased by £3,200,000, which had to be offset by an increase in charges refunded by the National Assistance Board of £456,000. This revenue figure itself was, no doubt, somewhat less than expected. But when taken in conjunction with an increase in the cost of prescriptions of £4,118,000, in spite

of a reduction of 20 millions in the number of prescriptions, it must cause everyone to wonder whether the change in method of charging was worthwhile and whether, in fact, the State would have fared better if the Government had left the charges as they were. The conclusion which the authors have drawn from their investigations is that about forty per cent of the rise in the cost of prescriptions between 1956 and 1957 was due to doctors prescribing larger quantities. This estimate seems to us to be based on sound and convincing calculations.

282. It is impossible, in the Committee's view, to ignore the fact that the charge is regarded by patients as a tax and that it stimulates all the instincts which taxes usually arouse in ordinary people, viz. to avoid paying more than they can help and to obtain as much as possible for what they have to pay. At the same time the doctors' representatives have told the Committee that they regard the charge as a tax on illness and old age. Thus, with both the parties principally involved anxious to alleviate the effects of the tax, it is not surprising that the trend of prescribing has been towards larger quantities since the new charge was imposed.

283. So far as incentive is concerned, the charge per prescription no doubt encourages patients to buy small quantities of simple remedies for themselves. There are small packs of such things as lint, bandages and aspirins which can be bought for a shilling or less. But the sum involved is hardly likely to match the cost of the avoiding action which, according to the estimate quoted above, amounts to something like £1¼ millions more under the shilling per prescription charge than it did when the charge was a shilling per form.

284. If there has to be a charge at all the only method which would counteract the incentive for avoidance and stimulate an incentive to economy, would be something which varied in proportion to the cost of individual prescriptions. If, instead of the charge of a shilling per prescription, a charge equal to a proportion of the cost were introduced, a radical change in incentive would immediately ensue. Patients would no longer want their doctors to prescribe extravagant quantities, since the larger the quantity the more they would have to pay. Nor would doctors be subjected to pressure from patients for unnecessarily expensive medicines.

285. At the same time different conditions would prevail in the pharmaceutical industry. The price factor would operate in N.H.S. as in ordinary business. A drug manufacturer would be anxious to make the price of his product attractive both to the doctor and his patient. The incentive for over-elaborate make-up and wasteful advertising would be reduced. Drug manufacturers would be keen to demonstrate in their literature that their prices were cheap. By this one alteration in the method of charging to make patients pay a proportion of their prescription costs instead of the shilling flat rate, many of the unsatisfactory features of the present system might be checked.

286. Unfortunately, however, there are several practical and administrative objections to a proportionate charge:

(a) A doctor might refrain from prescribing the more effective cure because it was expensive, or a patient might not present for dispensing an expensive prescription which a doctor had given him. Those needing very expensive drugs would be hardest hit.

(b) The collection of a percentage charge by the pharmacists would

impose an extra burden on them. They would have to work out the cost of every prescription. This would be much more onerous than collecting the shillings. Moreover, the amount of the charge would be liable to be challenged by patients. This work would militate against the prompt dispensing of prescriptions and make the pharmacists' task very difficult indeed during the peak periods for dispensing. Additional work would also arise in checking the sums collected and handed over.

(c) Dispensing doctors in rural areas would have the same difficulty in calculating the appropriate charge and might often have to do it when away from their surgery and records.

(d) Doctors who are paid for dispensing on a capitation fee basis would present additional complications.

287. Desirable, therefore, as a proportionate charge is on many grounds, it would seem to be administratively impracticable. If the one method of charging which seems to introduce desirable incentives is to be ruled out, the Committee doubt the wisdom, from the point of view of economy in prescribing costs, of continuing charges, particularly in their present form.

288. We consider that the present charge is a tax which stimulates avoiding action and is resented by patients and doctors as a tax on illness. In the case of dispensing doctors it involves appreciable unremunerated work. From the estimates quoted above, the financial effects of avoidance are more serious in the case of the charge per prescription than in the case of the charge per form. Under the latter system an extra number of prescriptions per form merely deprives the State of a portion of the expected revenue from charges. Under the former, however, the prescribing of increased quantities does more than deprive the State of revenue, it actually increases the prescription bill because the larger quantities are certain to result in more medicines being wasted.

289. We conclude therefore that, besides stimulating the wrong incentives, the charge per prescription has proved disappointing financially. The reactions which it has awakened have led to more undesirable and wasteful habits than the previous charge per form. Accordingly, we regard the former as an unsatisfactory method of financing the Service and as unlikely to secure the co-operation of doctors and patients which is essential if prescribing is to be kept on an economical basis.

290. These factors might seem to support a return to the shilling per form. Unfortunately there would seem to be little likelihood that prescribing costs would automatically revert to the lower level of 1956 if such a change were made.

291. In order to assess the relative merits of a charge per item, a charge per form or complete removal of the prescription charge, we asked the Social Survey whether they could arrange a special sample inquiry to gauge the likely public reaction to these various changes. We were told that such an inquiry was technically possible but other commitments unfortunately prevented the Social Survey from undertaking the inquiry within the time available. We recommend, nevertheless, that if any change in the basis of the prescription charge is contemplated in the future, it should not be put into effect without an attempt to assess in advance its probable effects by means of an inquiry of the kind mentioned above.

292. The Committee are strongly of the opinion that everything possible should be done to counteract the habits which have grown up since the charge per prescription was introduced and that there should be no delay in doing so. Habits tend to establish themselves and we fear that it will prove to be so in the present instance unless prompt action is taken.

293. We can understand that the Government must be reluctant to give up revenue which accrues from these prescription charges.

Nevertheless we feel that the Service cannot be put on an economic basis without the wholehearted co-operation of doctors and patients. Unfortunately the incentives stimulated by the present method of charging militate against this.

Accordingly we put forward suggestions in the following chapter which, if they work out satisfactorily, would, we hope, achieve considerable economies and even pave the way for the abolition of prescription charges altogether.

CHAPTER 15
RESTRICTION ON QUANTITIES

294. We have referred above, in our chapter dealing with "Methods of Charging", to the tendency to prescribe large quantities which has become apparent since the introduction of the shilling charge for each prescription. We quoted and accepted Dr. Martin's estimate that on statistical evidence about forty per cent of the increased cost of drugs since 1956 was due to the prescription of larger quantities and although this does not necessarily mean waste, some waste undoubtedly occurs.

This tendency is a matter of grave concern. It will give grounds for constant agitation and criticism, in the course of which things may be said which are disturbing to the public and likely to destroy confidence in the economic working of the pharmaceutical service as a whole.

In our earlier chapter on the doctor's right to prescribe, we decided not to recommend an absolute ban on the prescription of any categories but stated that the control of quantities would call for our separate consideration.

295. We do not consider that a voluntary limitation of quantities would be regarded by the medical profession as unfavourably as a restriction by categories. The selection of the drug most suitable for treating a patient and the appropriate dosage is a very different matter from the assessment of the quantity to be made available on each prescription. In the case of private patients the cost of the prescribed drugs is likely to affect the quantity ordered on each occasion. But in the case of drugs prescribed in the National Health Service this consideration does not apply: indeed, so far as some patients are concerned, "the more the better".

We believe that doctors might welcome a regulation which enabled them to say to an importunate patient, "The maximum amount permitted on one prescription is so much".

296. The Committee which reported to the New Zealand Minister of Health in May 1957 on measures to effect economies in the cost of pharmaceutical benefits recommended that the amount permitted to be ordered on any one prescription should be restricted to ten days' supply. In addition, one similar repeat would be permissible. In 1954 the New Zealand authorities had introduced a restriction on the maximum quantity to be ordered at one time and limited this to an amount necessary for fifteen days' treatment, with the possibility of one repeat. This measure, according to the report, considerably reduced the average cost of prescriptions.

It is interesting to note that this restraint on quantity was considered worthwhile as far back as 1954 and that the New Zealand Committee felt justified by the results in recommending that the same procedure should be even more stringently applied.

297. For many reasons it would be extremely difficult to administer this New Zealand scheme under the National Health Service. The checking of first prescriptions and repeats alone and the linking of prescriptions with the names of patients would call for complicated and expensive supervision. Moreover, the conditions of service of doctors in the New Zealand scheme are entirely different. Therefore, we have decided that that scheme as it stands would not be a solution to our problem.

298. It should be possible to reach an agreement with the medical profession that the amount of drugs supplied on one prescription should be limited either to that required for the patient's illness, if it be expected to last less than seven days, or to not more than one week's supply, with exceptions for chronic or particular cases. There are so many variable factors that it would be difficult or impossible to devise any effective regulation. Some courses of treatment last for five days only; others for twelve. The dosage of a particular drug varies greatly for different diseases and this applies in particular to the expensive antibiotics and steroids. It must be remembered, too, that practitioners generally have to see their patients at weekly intervals for purposes of certification and it is convenient to them to issue prescriptions at the same intervals.

After the first two weeks the aim should be to prescribe no more than a fortnight's supply at any one time except in long-term cases such as diabetes, epilepsy, asthma, chronic bronchitis, etc., when a special mark such as an asterisk could be added to the E.C.10.

299. We therefore advise the Minister of Health to approach the appropriate professional bodies for their co-operation in determining the details of a scheme, to include the suggestions we have made. We would like to see such a scheme run for a trial period of, say, two years at the end of which its usefulness might be reviewed.

300. It would help to make the scheme more effective if the Joint Formulary Committee were able to give advice, for example, by the inclusion in the alternative edition of the British National Formulary of more extensive information about reasonable quantities to be prescribed, on the lines of that already given for external preparations in their book.

301. If a voluntary scheme of the kind we have suggested proved successful in controlling expenditure on drugs, it might be expedient to consider the abolition of the prescription charge.

PART VIII

CHAPTER 16
MISCELLANEOUS MATTERS

(i) Socio-Medical information

302. At various points in this report we have mentioned the hampering effect which shortage of information has had on our work. Earlier committees, and notably the Guillebaud Committee, had a similar experience. We have done our best with such information as we could obtain but, more for the benefit of future inquiries than for our own, we should like to submit some general observations on the subject.

303. Complaints about deficiency in information are apt to be construed as referring to a shortage of statistics. This is not the whole, or even the main part, of our present concern. It is, of course, true that a great part of the factual information on which we have had to work is of a statistical character. We understand that the Ministry of Health is proposing to consolidate and to extend its statistical work in this field, a development which in our view is essential and should be strongly encouraged.

If it proves possible to enlist modern electronic machines in the work of the prescribing service (for which the routine character of the analysis seems to make them particularly appropriate) an enormous amount of new statistical material would emerge as a by-product. There will doubtless still be domains where ad hoc inquiries will be necessary and there will always be problems of linking official information on the N.H.S. with information from other fields; but if the Ministry pursues what we understand to be its present intentions the prescribing service should be very well documented.

304. Our primary difficulty, however, goes rather deeper. Without subscribing to a current view of statistics, in O. Henry's phrase, as the lowest grade of information known to exist, we draw a firm distinction (as does the statistician himself) between the statistics, the facts which the statistics represent, and the interpretation of those facts in medical or sociological terms. Sociological causes are complex things, not usually to be discerned clearly and unambiguously from a superficial examination of their effects. What a committee such as ours is liable to feel most need of is not figures, but a digested presentation of what the figures mean. We need give but a single instance: one of our primary duties was to consider the increase in the cost of the prescribing service over recent years; but we have not been able, despite some valuable help from Dr. Martin, to find out how much of that increase is due to unavoidable and how much to remediable causes.

305. The inference we draw from this is that the Ministry of Health should encourage continuous studies of the economic and social aspects of the National Health Service. We emphasise the word "continuous". It is not

to be expected that Governments or committees in the future will be able to find sociologists or medical statisticians ready at hand to analyse and to interpret current movements, unless such men have been working at and thinking about the subject over a period of years. To appoint a committee of inquiry is a waste of time unless that committee can not only inquire, but obtain correct answers to its inquiries. It is not a question of statistics or of expert evidence. What is so badly needed is penetrative study and co-ordinated knowledge.

306. It seems very possible that this is not the last occasion on which an examination of rising costs may have to be held in one part or another of the National Health Service. It would, in our view, be very desirable to take steps now to ensure that when such an examination is required there shall exist the quantitative studies on which it must rest if it is to be satisfactory, and the men who can carry out such further research as is needed. Whether this preparatory and continuous study should be conducted inside or outside the Government Service is a matter which we think the Government must decide for itself. But we feel that the Government should be responsible for seeing that it is carried out somewhere. Otherwise inquiries of the kind with which we ourselves are concerned are in some danger of frustration. They may palliate without curing.

(ii) Dispensing Doctors' Costs

307. General practitioners in rural areas may dispense drugs and supply appliances to any patient who would have serious difficulty in obtaining them from a pharmacist or who lives at least a mile from the nearest pharmacy. About 2,700 practitioners dispense for some or all of their patients. A dispensing doctor may elect to be paid for all his prescriptions on the same basis as a pharmacist, that is in accordance with the Drug Tariff. Alternatively, he may receive a capitation payment* in respect of each patient for whom he dispenses to cover the supply of all drugs and appliances except certain expensive drugs and appliances on a special list and other relatively expensive drugs required for prolonged treatment where the total cost is high. For these he is entitled to additional payment.

308. Approximately 500 doctors have chosen to be paid on the basis of the Drug Tariff. In order to claim payment for the items they supply they write out prescriptions on Form E.C.10 which they send for pricing by the Joint Pricing Committee and for which they are paid by the Executive Council. The following table shows the numbers and gross costs of prescriptions submitted by these doctors:

Table 13

Year	Total No. of prescriptions (000's)	Gross cost of prescriptions
1951/52	2,544	£363,749
1952/53	2,588	£400,032
1953/54	2,323	£370,228
1954/55	2,480	£411,760
1955/56	2,569	£460,280
1956/57	2,449	£493,324
1957/58	2,303	£586,652

*10s. 0d. per annum as from 1st January, 1959.

309. The following table compares the average costs of prescribing doctors and dispensing doctors paid on the Drug Tariff basis:

Table 14

Year	Average cost per prescription		Average cost per patient on doctors' dispensing/ prescribing list		Average frequency of prescriptions per patient	
	Dispensing doctor (Drug Tariff)	Prescribing doctor	Dispensing doctor (Drug Tariff)	Prescribing doctor	Dispensing doctor (Drug Tariff)	Prescribing doctor
	s. d.	s. d.	£ s. d.	£ s. d.		
1951/52	2 10	3 10	15 0	1 1 1	5·25	5·49
1952/53	3 1	4 1	14 10	1 2 6½	4·80	5·53
1953/54	3 2	4 1	15 0	1 2 0½	4·70	5·39
1954/55	3 4	4 3	16 7	1 3 8½	4·99	5·57
1955/56	3 7	4 6½	18 0	1 5 8½	5·03	5·63
1956/57	4 0	5 2½	18 7	1 7 5	4·61	5·24
1957/58	5 1	6 0	1 1 4	1 10 1	4·19	5·01

310. About 2,200 dispensing doctors are paid on a capitation basis. The gross payments made to these doctors for provision of drugs in 1957/58 totalled £1,308,000, representing an average payment per dispensing patient of 12s. 2d.

311. The figures for dispensing doctors do not necessarily represent the whole of their expenditure on drugs as they are entitled, if the patient agrees, to issue a prescription on a special form (Form E.C.10(D)) for dispensing by a pharmacist. In the case of a dispensing doctor paid on the capitation basis the prescriptions so issued are restricted to those drugs and appliances for which he receives additional payment. We understand that the extent to which such prescriptions are issued is not known.

312. Comparison shews that in average cost and frequency of prescription and cost per patient the dispensing doctor, whether paid on the Drug Tariff basis or by capitation fee, appears to be more economical than his prescribing colleague. A possible reason is that in purchasing and handling the drugs he uses, the former investigates the prices and alternatives and buys in the best market.

313. Various suggestions have been put forward from time to time for bringing prescribing doctors' costs down nearer to those of their dispensing colleagues. Very briefly, such suggestions would provide for an estimate to be made each year of the amount required to meet the Drug Bill. If as a result of economy in doctors' prescribing costs the actual Drug Bill for the year in question fell short of the estimate, the difference would be distributed among those doctors whose actual prescribing costs were below average. An arrangement of this kind (the so-called "floating sixpence" to which we refer in paragraph 22 above) was tried out under the original National Health Insurance scheme but was abolished in 1920.

314. We see serious objections to schemes of this kind. Patients would feel that doctors were being encouraged to practise economy at their expense. Furthermore, the working of such a scheme might call for a fundamental re-

vision of the present system of remunerating doctors, a matter which is outside our terms of reference.

315. There is reason, nevertheless, for thinking that the present amount of the capitation payment is too low and that it should be raised to a more realistic level. The opinion was expressed to us that, where dispensing doctors were working on the basis of the present capitation rate, they were either not giving up-to-date forms of treatment or were dipping into their own pockets to subsidise the State.

(iii) Stock Orders

316. Prescribing doctors in England and Wales receive an allowance of 2s. 6d. per annum per 100 patients on their lists with which to purchase surgery stocks for immediate administration or for use before supplies can be otherwise obtained. Separate payment on priced costs may be claimed for certain other items supplied and administered personally. In Scotland, doctors have been permitted to order necessary stocks of drugs and appliances from time to time on a special prescription form (Form E.C.10A). The pharmacists who meet these orders receive the net ingredient cost of the items ordered plus 25% on-cost allowance, but are not paid dispensing fees as in the case of ordinary prescriptions.

317. The following table shows for England and Wales and for Scotland the average costs of drugs per patient on prescribing doctors' lists. The figures quoted include the cost of stock orders:

Table 15

Average cost of drugs per patient on prescribing doctors' lists

Year (1)	England and Wales (2)	Scotland (3)	
			pence
1952/53	£1 2s. 6½d.	£1 3s. 0d.	(5·3)
1953/54	£1 2s. 0½d.	£1 4s. 1d.	(5·3)
1954/55	£1 3s. 8½d.	£1 4s. 4½d.	(5·4)
1955/56	£1 5s. 8½d.	£1 4s. 8½d.	(5·6)
1956/57	£1 7s. 5d.	£1 6s. 7½d.	(5·6)
1957/58	£1 10s. 1d.	£1 10s. 1d.	(6·0)

Notes:

(i) The average cost for England and Wales excludes the payment to doctors of 2s. 6d. per 100 patients on their prescribing lists for the liability to supply drugs in emergency before a supply can otherwise be obtained. If this item is included it would have the effect of increasing each of the amounts in Col. (2) by 0·3 pence.

(ii) The average cost for Scotland includes the cost of ordering such drugs in bulk on Form E.C.10A.

(iii) The amounts shown in parenthesis in col. (3) represent the average cost per person of stock orders in Scotland for the years 1952/53-1957/58 already included in the main figures shown in col. (3).

318. The cost of the Scottish stock orders scheme covers not only emergency drugs but also drugs administered personally by doctors, the supply of which is permitted under their terms of service.

319. To obtain a direct comparison between the cost of the Scottish scheme (approximately £2 10s. 0d. per 100 patients) and the cost of making similar provision of drugs, etc., in England and Wales it would be necessary to add to the capitation fee of 2s. 6d. per annum per 100 patients the cost of drugs administered in person for which special separate payment is made. We are informed that this cost is not separately known.

320. We understand that efforts have been made in the past in England and Wales to devise a stock orders scheme but that following the introduction of the shilling prescription charge in 1952 the retail pharmacists decided against participation on the grounds that the scheme would be open to abuse.

321. We have questioned both the doctors' representatives and those of the retail pharmacists on this issue. While the former are wholeheartedly in favour of stock orders, the latter object mainly on the grounds that they would lose considerable dispensing business if such a scheme were introduced.

322. We are not satisfied, on the information we have been given about the Scottish experience of stock orders, that such a scheme, if introduced in England and Wales, would be likely to produce any net economies. Doctors are already empowered to provide drugs for immediate use or to tide patients over until a supply can be obtained from the pharmacist and we see no real need to supplement these arrangements. From what we have heard, however, the present rate of payment of 2s. 6d. per annum per 100 patients appears to be inadequate, even if allowance is made for the fact that doctors are paid in full for certain special items.

323. We do not think that a stock orders scheme is necessary in England and Wales but we recommend that consideration should be given to an early and substantial increase in the present capitation payment for the supply of drugs for immediate administration.

(iv) Substitution

324. Pharmacists in contract with Executive Councils under the National Health Service in England and Wales are required by their terms of service to supply only those drugs and appliances which the doctor orders. When a drug (or appliance) is not available as prescribed, the pharmacist consults the doctor to discover his intentions and should obtain the latter's written endorsement if any amendment of the original prescription is required.

325. Some hospitals authorise their pharmacist in appropriate cases to dispense a different preparation from the one prescribed. One hospital authority, for example, has adopted a recommendation providing that "in the case of a substance for which standards of purity and/or potency are officially laid down, the pharmacist shall have the right to dispense that substance irrespective of the particular brand which is ordered on the prescription." A proviso was made that if a consultant (but presumably not his juniors) wished a particular brand to be dispensed he could make this known on the prescription.

326. We have seen evidence which suggests that this practice has effected savings in the drug bills of some hospitals. But we must point out that this substitution is a matter of agreement between the medical authorities and the pharmacists within a particular institution and does not reproduce the conditions in general practice.

327. Some of those who gave evidence to the Committee thought that retail pharmacists providing pharmaceutical services under the Act should be authorised to supply the official equivalent where a proprietary drug was prescribed. This might be done by providing doctors with pads of Form E.C.10 over-printed with the words "or equivalent B.P., B.P.C. or B.N.F. preparation". The doctor would cancel the over-printed instruction if he wanted to have a particular brand dispensed. If the over-print was not cancelled the pharmacist would be entitled to supply an equivalent, which might be another proprietary brand or a non-proprietary form of the drug.

328. The following advantages were claimed in support of this suggestion:

(i) the pharmacist would need to stock one brand only of each of a large range of drugs and would be enabled to purchase in greater quantities and hence more economically;

(ii) intensified competition between proprietaries and with non-proprietary equivalents might reduce prices;

(iii) duplication of drugs might be reduced.

329. The Industry itself strongly opposes substitution on the grounds that a firm's ability to continue in business is identified with the names of its products. It contends that if substitution by retail pharmacists was allowed the value of the work done by one manufacturer in developing a particular product would accrue to his rivals.

330. We have given this proposal careful consideration in view of the undoubted savings it has achieved in some hospitals.

331. It is unfair, in our opinion, to impose on the pharmacist the onus of substituting an equivalent preparation for the one prescribed. The term "equivalent" may be used in two different senses. It may imply identical equivalent, where the identity is susceptible to proof by chemical methods, but even with products containing identical therapeutical substances there may be pharmaceutical variations. The term "equivalent" may also imply a therapeutic equivalent which can only properly be decided by the prescriber. Pharmacists should not be expected to take the responsibility of deciding on the equivalent and representatives of retail pharmacists have told us that they would not wish to accept this responsibility. Indeed it is possible that such substitution might lay a pharmacist open to legal action by the manufacturer of the product originally prescribed even if the substitution were based on a list of equivalents.

332. Substitution removes any incentive on the part of the prescriber to get to know the non-proprietary alternatives to proprietary preparations with which he is made familiar by the advertising campaigns of the manufacturers.

333. A consultant, when referring a patient back to the general practitioner after a period of treatment in hospital, may well recommend to the practitioner a proprietary preparation which, although prescribed in hospital, had never in fact been supplied to the patient owing to substitution by the hospital pharmacist.

334. We have some doubts in addition about the ethics of supplying a different preparation from the one prescribed by the doctor.

335. For these reasons we reject substitution as a practical method of securing

economies in the drug bill. The only effective long term answer in our view is to train doctors to prescribe critically and with discrimination.

(v) Purchase Tax on Drugs

336. It has been brought to our notice that the drug bill includes an item in respect of purchase tax paid on medicinal preparations prescribed under the National Health Service. Purchase tax is levied on drugs and medicines, except those specifically exempted from tax, at the rate of 30% of their wholesale value. Certain drugs and medicines listed in special Exemption Orders and those described in specified works of reference including the British Pharmacopoeia, the British Pharmaceutical Codex and the British National Formulary are exempt from the tax. But nothwithstanding the fact that a wide range of drugs and medicines supplied under the National Health Service are exempt, we understand that the approximate sum included in the annual drug bill for purchase tax amounts to as much as £850,000, made up as to about £680,000 in respect of the actual preparations plus the 25% chemists' on-cost (£170,000) payable on that sum. The tax collected annually on drugs and medicines generally totals about £11 millions.

337. We are informed, however, that so long as purchase tax continues to be levied on medicines the administrative difficulties involved in excluding just those items which are prescribed under the N.H.S. would be considerable, while the expense likely to be involved might be disproportionate to the saving. We realise that there are obvious complications inasmuch as medicines in the hands of retail pharmacists, on which purchase tax has been paid, may be used for supply either to N.H.S. patients or privately.

338. It would obviously be outside our terms of reference to make any recommendation as to the general incidence of purchase tax, though from the N.H.S. point of view it certainly inflates the drug bill. The element of purchase tax is taken into account apparently when determining pharmacists' on-cost in Whitley negotiations.

339. We, therefore, content ourselves by drawing attention to the position as it exists, and offering the suggestion that, so long as it continues to be the policy of the Exchequer to levy tax in this way, the amount by which the drug bill is inflated should be noted and publicised every year.

PART IX
GENERAL CONCLUSIONS

340. We are satisfied that the pharmaceutical service has conferred great benefits on the community as a whole but its increasing cost might lead to a very difficult situation if the financial position of the country deteriorated in such a way that it became impossible to pay for a service such as the nation now enjoys.

341. The size of the drug bill is already so formidable that we feel bound to add to the suggestions we have already made in our reports. We think that the Minister should have the assistance of a permanent expert body to advise him expeditiously on all matters affecting the trend of costs in the pharmaceutical service. We suggest that the members of the advisory body should include business men conversant with current commercial practice, an economist and a statistician and that they should be empowered to consult representatives of the medical and pharmaceutical interests.

342. Of the need of such expert advice on costs we have no doubt. The Committee of Public Accounts have drawn attention to a pilot inquiry into prices paid by pharmacists which disclosed that, in a number of instances, they were apparently able to purchase drugs substantially below the Drug Tariff rates at which the Ministry of Health reimbursed them. Adjustments in the basis of payments designed to put the Drug Tariff prices on a more realistic footing have now been made. In fairness to pharmacists it should be stated that their representatives have disputed some of the implications of the findings of the Committee of Public Accounts. This underlines the importance both to the public and the Health Service of immediate investigation of problems as they arise.

343. There is clearly nothing wrong in pharmacists buying at less than the Drug Tariff rates. In fact they should be encouraged to do so. But those responsible for administering the pharmaceutical service should surely have sufficient business acumen to ensure that the taxpayer shared in some of the savings which could be made.

344. We recommend that this advisory body should have referred to it all matters affecting the costs of the pharmaceutical service. In particular it should be asked to initiate and advise on special or continuous inquiries of the kind we have mentioned in our report, and to study and interpret all statistics which have a bearing on the cost of the service and make recommendations as to how to apply the results. It should be asked to advise on all negotiations with drug manufacturers and pharmacists which have a bearing on costs and on the implementation of some of the recommendations in our report and it should be responsible for producing an annual report on the cost of prescriptions in the National Health Service.

345. The need for Advisory Committees on technical and professional aspects is accepted and there are Medical and Pharmaceutical Committees already in

existence. But the economic and business side of the service equally calls for supervision by people with the appropriate training, experience and outlook, who are not to be found within the Ministry itself. The work of the new Economic Advisory Committee should dovetail as far as possible with that of the other Advisory Committees and there might be a link through personnel.

346. The constant objective must surely be to devise some method of ensuring the proper balance of supervision and incentive so as to keep the pharmaceutical service economical and solvent as well as efficient and humane. In our opinion there would be a much better chance of achieving this if a body such as we have outlined above were to be responsible for grappling with the problems involved. The constant setting up of "ad hoc" committees involves a great deal of time and expense on each occasion, and fast changing conditions soon make their recommendations out-of-date.

(sgd.) HENRY HINCHLIFFE
W. BROCKBANK
K. R. CAPPER
H. C. FAULKNER
F. E. GOULD
D. V. HUBBLE
C. A. KEELE
M. G. KENDALL
A. M. MAIDEN
G. F. PETTY
A. D. STOKER
A. P. THOMSON

E. L. MAYSTON (*Secretary*)
25th March, 1959

APPENDIX 1

Evidence

Evidence was received by the Committee from the following organisations and individuals:

The following gave written and oral evidence

British Medical Association
The College of General Practitioners
The Fellowship for Freedom in Medicine (Ltd.)
British Pharmacopoeia Commission
Pharmaceutical Society of Great Britain
The Association of British Pharmaceutical Industry
Central National Health Service (Chemist-Contractors) Committee
Executive Councils' Association (England)
Joint Pricing Committee for England
Ministry of Health

Individual:

J. P. Martin, Esq., B.A., Ph.D.
Mrs. Sheila Williams, B.A.

The following gave written evidence only

Royal College of Surgeons of England
Royal College of Physicians
Royal College of Obstetricians and Gynaecologists
Deans of London Medical Schools
Conference of Deans of English Provincial Medical Schools
Medical Practitioners' Union
Socialist Medical Association
General Practice Reform Association
British Pharmacological Society
Association of Welsh Executive Councils
Kingston-upon-Hull Local Medical Committee
Lincoln Local Medical Committee
The Hahnemann Society
B. Burns, Esq., M.R.C.S., L.R.C.P.
A. M. Chatelier, Esq., L.R.C.P., L.R.C.S., Ed., L.R.F.P.S.
H. L. Daniels, Esq., M.P.S.
J. Dewhirst, Esq., M.P.S.
G. T. Epsley, Esq., B.A., M.P.S.
J. Etheridge, Esq., M.R.C.S., L.R.C.P.
R. T. Jones, Esq., M.R.C.S., L.R.C.P.
Mrs. M. Rosenberg
W. Trillwood, Esq., F.P.S.
J. D. W. Whitney, Esq., M.B., B.S., M.R.C.S., L.R.C.P.
G. Nesbitt Wood, Esq., M.A., M.B., B.Ch., M.R.C.S., L.R.C.P.

The following gave oral evidence only

The Rt. Hon. The Earl of Woolton, C.H.
The Lord Cohen of Birkenhead, M.D., D.Sc., LL.D., F.R.C.P., J.P.
Professor Sir Charles Dodds, M.V.O., F.R.S., M.D., D.Sc., F.R.C.P.

APPENDIX II

Questionnaire addressed to the Association of British Pharmaceutical Industry

(i) The Committee has received criticisms from medical practitioners that much advertising literature is repetitive and inadequately informative. Will the Association comment on this and will it consider proposing some scheme of voluntary limitation of this form of advertising?

(ii) Will the Association recommend to its members that advertising literature sent to doctors should give the prices of the products described?

(iii) What proportion of the annual turnover in proprietary medicines usually issued on prescription is spent on (a) publicity (b) research?

(iv) How is research usually financed? What is the allocation in typical examples to (a) chemical investigations for the development of new compounds (b) pharmacological and clinical trials and (c) formulation?

(v) What steps, if any, should be taken to encourage further development of research leading to the production of new therapeutic agents by the British pharmaceutical industry?

(vi) How do the Committee on Prescribing's categories influence the sale of proprietary drugs and preparations at home and abroad?

(vii) How would the British pharmaceutical industry be affected if:

(a) All new drugs were put through a 6-12 months' clinical trial before acceptance for use by the National Health Service?

(b) The more expensive proprietary preparations in categories 3 and 4 were replaced by official pharmaceutical or therapeutic equivalents for use by the National Health Service?

(c) Categories 5 and 6 were no longer prescribable in the National Health Service?

APPENDIX III

Questionnaire addressed to the Central National Health Service (Chemist-Contractors) Committee and Pharmaceutical Society of Great Britain

1. How is the membership of the Committee made up?
2. Have the Committee any views on:
   - (i) The methods and costs of distribution of pharmaceutical products;
   - (ii) Remuneration of retail pharmacists under the National Health Service;
   - (iii) Charges for prescriptions, including the difficulties of collection;
   - (iv) Use of non-proprietary names for prescribing manufactured products;
   - (v) Problem of dead stock;
   - (vi) Stock order scheme for general practitioners;
   - (vii) Full pricing of prescriptions;
   - (viii) Purchase tax on drugs supplied under the National Health Service?
3. Have the Committee any suggestions for keeping the drug bill within reasonable bounds?

APPENDIX IV

Financial effects of imposing prescription charges

Basis of estimates made by Dr. J. P. Martin and Mrs. Sheila Williams

The basis on which the estimates quoted in table 11 on page 87 were calculated is as follows:

1. The figures in the table, except those in column 5, are based on statistical prescription data supplied by the Joint Pricing Committee for England.

2. Actual revenue shown in column 2 was calculated from the number of prescription forms.

3. The estimate made by Dr. Martin and Mrs. Williams of the savings to patients resulting from the writing of more prescriptions per form (column 3) was calculated by taking the total number of prescriptions for each year from 1952 to 1956 inclusive and dividing them by the number of prescriptions written per form in 1951. The estimate errs on the side of caution because the number of prescriptions per form in 1951 was rather higher than usual.

The calculation is as follows:

Let p_{51} be the number of prescriptions per form in 1951 = 1·58

Let p_i be the number of prescriptions per form in the i'th year

Let n_i be the total number of prescriptions written in the i'th year

Then, as each prescription form cost the patient £$\frac{1}{20}$, the total saving to patients in England during the year was:

$$\left(\frac{n_i}{p_{51}} - \frac{n_i}{p_i}\right) \div 20 \text{ pounds}$$

Applying this formula gives the following results:

Year	n_i	p_i	p_{51}	*Saving (to nearest £1,000)* £
1952	107,038,898*	1·71	1·58	265,000
1953	204,181,431	1·72	1·58	526,000
1954	203,071,240	1·74	1·58	591,000
1955	210,030,182	1·73	1·58	576,000
1956	198,423,352†	1·73	1·58	544,000
			Total	£2,502,000

4. The total actual plus 'lost' revenue shown in column 4 is the sum of the figures in columns 2 and 3.

* From 1st June.

† To 30th November.

5. The totals of charges refunded shown in column 5 are based on figures in the Annual Reports of the National Assistance Board. They relate to charges refunded in respect of prescriptions and appliances i.e. the same basis as the prescription statistics. Dr. Martin and Mrs. Williams were supplied with the actual figures for England for 1956, but the remaining figures are their estimates obtained by scaling down the figures for England, Wales and Scotland together. The scaling down was done on a conservative basis, using the actual figures for 1956 and 1957 for a guide, so that the figures in this column probably slightly underestimate the actual sums refunded. The English figures were assumed to be 83% and 81% of the figures for Great Britain for prescriptions and appliances respectively. The 1956 figure in column 5 is for the whole year and therefore is not strictly comparable with the figures for 1956 in columns 2, 3 and 4.

APPENDIX V

High and low cost areas in England and Wales 1956 *and* 1957

(see paragraph 97)

The following tables indicate for 1957 the County Borough Executive Councils and the County Executive Councils with the highest and lowest average total cost of prescriptions per person on doctors' lists and prescription frequency per person. The figures in brackets are those for 1956.

COUNTY BOROUGHS

(i) Areas with highest costs and frequencies

Highest average total cost of prescriptions per person			Highest prescription frequency per person		
Executive Council	Cost per person		Executive Council	Prescription frequency per person	
	d.	d.			
Wigan	511·44	(463·61)	Wigan	8·03	(8·99)
Warrington	504·03	(458·92)	Warrington	7·30	(8·29)
Blackpool	486·05	(429·34)	Wakefield	7·10	(7·99)
Bournemouth	479·58	(453·92)	Manchester	6·38	(7·25)
Blackburn	479·43	(444·29)	Oldham	6·37	(7·17)
Wakefield	478·38	(442·33)	Rotherham	6·36	(7·10)
Barrow	465·23	(430·81)	Burnley	6·34	(7·09)
Manchester	458·03	(419·43)	Preston	6·32	(6·96)*
Preston	456·48	(423·82)	Merthyr Tydfil	6·30	(7·56)
Merthyr Tydfil	454·18	(426·02)	Liverpool	6·25	(7·47)

(ii) Areas with lowest costs and frequencies

Lowest average total cost of prescriptions per person			Lowest prescription frequency per person		
Executive Council	Cost per person		Executive Council	Prescription frequency per person	
	d.	d.			
West Bromwich	275·64	(257·65)	Tynemouth	3·93	(4·21)
Tynemouth	294·10	(259·77)	Southampton	4·25	(4·73)
Worcester	297·30	(268·05)	Worcester	4·32	(4·70)
Coventry	304·14	(262·66)	Middlesbrough	4·38	(4·80)
Bootle	306·59	(271·85)	Ipswich	4·46	(5·07)
Walsall	307·52	(286·43)*	Gateshead	4·51	(5·03)
Birmingham	310·96	(275·02)	Coventry	4·57	(4·80)
Middlesbrough	311·59	(267·47)	Gt. Yarmouth	4·59	(5·01)
East Ham	314·58	(283·05)	Bootle	4·72	(5·29)*
West Ham	316·22	(297·03)*	Grimsby	4·79	(4·88)

*Not in highest or lowest ten in 1956.

(i) Areas with highest costs and frequencies

Highest average total cost of prescriptions per person			Highest prescription frequency per person		
Executive Council	Cost per person		Executive Council	Prescription frequency per person	
	d.	d.			
Caernarvon	544·50	(491·40)	Caernarvon	7·54	(8·49)
Cardigan	470·40	(407·45)	Anglesey	6·69	(7·43)
Soke of Peterborough	446·03	(372·31)	Cardigan	5·99	(6·95)
Merioneth	445·62	(397·63)	Denbigh & Flint	5·95	(6·49)
Anglesey	436·55	(388·42)	Merioneth	5·91	(6·73)
Westmorland	427·46	(377·38)	Glamorgan	5·86	(7·00)
Glamorgan	426·68	(400·12)	Soke of Peterborough	5·80	(6·23)
Monmouth & Newport	423·73	(395·15)	Westmorland	5·69	(6·21)*
Cornwall	423·25	(383·03)	Carmarthen	5·63	(6·50)
Carmarthen	413·11	(360·54)*	Monmouth & Newport	5·62	(6·62)

(ii) Areas with lowest costs and frequencies

Lowest average total cost of prescriptions per person			Lowest prescription frequency per person		
Executive Council	Cost per person		Executive Council	Prescription frequency per person	
	d.	d.			
Hunts.	215·35	(185·66)	Hunts.	3·25	(3·49)
Northants	243·84	(220·18)	Northants	3·62	(3·95)
Radnor	254·15	(233·86)	Berkshire	3·64	(4·04)
Hereford	270·24	(251·36)	Isles of Scilly	3·64	(4·11)
Worcestershire	274·88	(252·19)	Leics. & Rutland	3·71	(4·05)
Berkshire	276·05	(255·85)*	Suffolk, East	3·80	(4·23)
Suffolk, East	276·06	(252·07)	Cambridgeshire	3·83	(4·18)
Lincs. (Holland)	277·18	(245·90)	Norfolk	3·94	(4·34)
Lincs. (Kesteven)	279·14	(251·63)	Oxford County & City	3·97	(4·38)
Cambridgeshire	280·12	(250·93)	Radnor	3·97	(4·52)*

*Not in highest or lowest ten in 1956.

Wt. 404226/9255 4/59 K72 O.B.&S.Ltd. Op. 999

Sulphapyridine was first prepared by Dr M. A. Phillips from acety-sulphapyridine which had previously been prepared by Mr C. Newbery. Both Dr Phillips and Mr Newbery were chemists in the laboratories of May & Baker Ltd. (hence the letters 'M & B') whose Director of Research was Dr A. J. Ewins.